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Marginal Notes

For a Tapered Post Hole—

Comment on Digby Holeston Postlethwaite and "The Strange Case of the Seven-Sided Post Hole" continues to flood ASA headquarters. Since the following letter raises the post-hole problem to the status of a full-fledged technical controversy, we publish it here in full. It is reprinted from *Chemical & Engineering News*, August 27, 1951.

Dear Sir:

"I have been making post holes for a number of years, and during all this time have been fighting a losing battle with the National Association of Well and Post Hole Manufacturers.

"D. Holeston Postlethwaite, as you state in 'News-Scripts' (July 30, page 3138), has done the industry a service in promoting the standardization of a single type of post hole instead of the thousands we used to make. But in choosing the present asinine American Standard for lap welded, butt welded, and seamless post holes, he has shown more bustle than brains.

"There is no quarrel with the standard hexagonal cross-section; it has all the advantages enumerated in your article, but any fool should be able to see that a tapered hole is superior. Only 7 percent taper is required. The shipping charges on these are trifling; an astronomical number of them can be stacked one inside the other in a freight car without losing the advantages of hexagonal nesting. And have you ever, as a practical matter, tried to drive a post hole that was not tapered? So much for Postlethwaite.

"Naturally, I well remember the government specifications calling for a seven-sided post hole. As a matter of fact, one manufacturer did build a small number of these for government approval. There are 7000 seven-sided post holes available as surplus, for the hauling charge from Austin, Tex. Bargain hunters, however, would do well to look into the ICC regula-

tions for shipping post holes, as some awkward situations have arisen, due to insecure loading on trucks."

H. L. PINKERTON
Jenkintown, Pa.

Please Make This Correction—

A typographical error has been discovered in the Foreword to "Dollar Savings Through Standards" as published in the October issue of STANDARDIZATION. The first point in the analysis of check lists returned by companies participating in the ECA survey (top of second column, page 306) states: "The greatest number (over 15 percent) derived savings from reduced inventories . . ." The percentage shown in this statement should have been "75 percent" not "15 percent."

Our Front Cover

"In recognition of service in the development of voluntary standards" the Board of Directors of the American Standards Association this year inaugurated The Standards Medal. First Award was made unanimously to Dr Paul Gough Agnew (page 361).

The award carried the following citation:

"His long service and leadership in the cause of standards began with the modern standards movement in America. Called from the National Bureau of Standards to serve as Secretary and first Executive Officer of the American Engineering Standards Committee, later renamed the American Standards Association, he guided its growth, built its staff and its membership, and steered its work for nearly thirty years. Possessed of a world-wide view, he played a leading part in the international standards movement which resulted successfully in the formation of today's International Organization for Standardization. Author, scholar, scientist, outstanding authority on standards in the United States, through a long and distinguished career, his name is written large, imperishably, and with honor in the world of standards."

Opinions expressed by authors in STANDARDIZATION *are not necessarily those of the American Standards Association.*

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Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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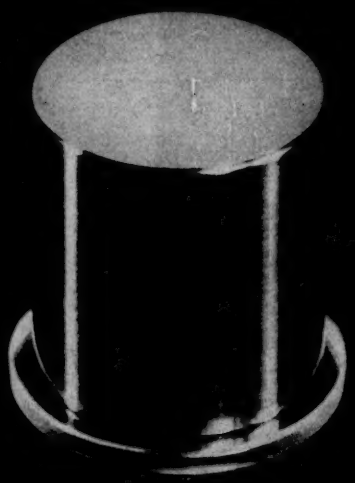


National Bureau of Standards

A platinum-iridium cylinder at the National Bureau of Standards is the National Standard of Mass defining all metric measurements of mass in the United States. The Standard Mass, weighing one kilogram, is 39 millimeters high and 39 millimeters in diameter, and is made of an alloy containing 90 percent platinum and 10 percent iridium.

Fifty Years of Scientific Standardization

by E. C. Crittenden

Dr Crittenden is Associate Director Emeritus of the National Bureau of Standards, having retired in 1950. He himself had a leading role in many of the scientific developments of which he speaks—notably in the development and adoption of the new fundamental unit of candle power. He also had an important part in recent changes, national and international, in electric and magnetic units. For many years he was active not only in NBS scientific and administrative work but also in technical committees and in administrative positions with the American Standards Association. He served for some time as chairman of the Standards Council and as a member of ASA's Board of Directors, as well as on the Electrical Standards Committee and United States National Committee of the International Electrotechnical Commission.

THE National Bureau of Standards, created by Act of Congress on March 3, 1901, has now completed its first half century of service. In honor of the Bureau's fiftieth anniversary, a large number of scientific and technical organizations — among them several ASA member societies—are holding meetings in Washington during 1951. NBS is also sponsoring a series of symposia representing scientific fields in which there is considerable current interest and in which the Bureau is active.

The word "standard" has many meanings; the term was not explicitly defined in the law creating NBS, but the intent of the Congress in establishing the Bureau was made fairly clear in the paragraph prescribing its functions:

> "The functions of the Bureau shall consist in the custody of the standards; the comparison of the standards used in scientific investigation, engineering, manufacturing, commerce, and educational institutions with the standards adopted or recognized by the Government; the construction, when necessary, of standards, their multiples and subdivisions; the testing and calibration of standard measuring apparatus; the solution of problems which arise in connection with standards; the determination of physical constants and the properties of materials, when such date are of great importance to scientific or manufacturing interests and are not to be obtained of sufficient accuracy elsewhere."

Fifty years have brought such a development of laboratory facilities in this country that it is now hard to realize the conditions existing at the turn of the century. They are set forth in the following resolution adopted by the National Academy of Sciences in 1900:

> "Whereas the facilities at the disposal of the Government and of the scientific men of the country for the standardization of apparatus used in scientific research and in the arts are now either absent or entirely inadequate, so that it becomes necessary in most instances to send such apparatus abroad for comparison: Therefore, be it *Resolved*, that the National Academy of Sciences approves the movement now on foot for the establishment of a national bureau for the standardization of scientific apparatus."

Similar endorsements were also sent to Congress by the American Chemical Society, the American Physical Society (then one year old), the American Institute of Electrical Engineers, and by the country's leading physicists, chemists, and engineers.

In brief, the purpose for which NBS was established was to provide in this country, first, a basis for accurate measurements and, second, a source of information regarding basic properties of materials determined by such measurements. The facilities provided for this task were meager. The first year's appropriations included about $27,000 for salaries of a staff of 14 and $10,000 for equipment. However, the construction of a laboratory building to cost $250,000 was authorized, and $25,000 was provided for the purchase of land. For this, 8 acres in the outskirts of Washington were obtained, which constituted the nucleus of the present 72-acre site of NBS.

Obviously, to perform its specified functions NBS had to establish its own standards and to obtain or make measuring apparatus of suitable accuracy to carry out the calibrations required by science and industry. Besides the basic measurements of length and mass, for which the country's primary standards were inherited from the old Office of Weights and Measures, standards and instruments had to be developed for heat and temperature, for light and radiant energy, and for various electrical quantities. These developments, along with the researches in physics and chemistry necessary to assure the reliability of the standards, and a constantly growing load of testing of instruments and materials, constituted the major part of NBS activities for a decade. In fact, similar activities to meet the needs for greater accuracy of measurements in old fields and for methods and instruments in new fields of science and industry have continued to be the primary function of the Bureau, but applications to practical problems have also grown until at times they overshadow the basic measurement work.

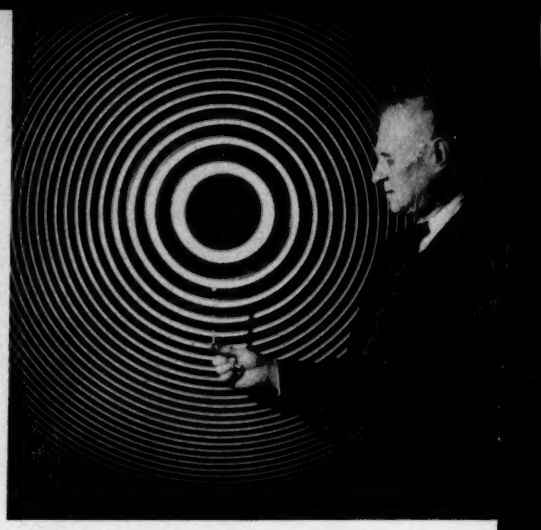
Among the important branches of the work which have thus grown out of measurements and tests is the development of "standards" in the sense of specifications and codes, that is, standards of quality and of practice. In general, "standards" of this kind have been a by-product, or at least work on them has been a secondary activity; nevertheless, NBS has had important influence in promoting industrial standardization in this country.

Commodity Testing and Standards of Quality

Testing of materials and supplies purchased by the Government, and the preparation of specifications for such materials, early became an important part of the Bureau's work. Regular testing of electric lamps for various branches of the Govern-

ment began in 1904. This work increased rapidly so that the facilities for it had to be enlarged in 1906. The following year a conference of Government engineers and manufacturers arranged by NBS prepared specifications for lamps, which were published as an NBS Circular and adopted by most of the Government departments. Successive editions of these "Standard Specifications for Incandescent Electric Lamps" were issued until the Federal Specifications Board took over publication of Government specifications in 1928.

Chemical analyses of samples representing materials purchased by the Government were also begun about 1906. This work likewise grew rapidly and expanded to include tests of the mechanical properties of many materials, such as paper, textiles, lubricating oils, and various building materials. The establishment of the Government's General Supply Committee in 1909 led to added testing of commodities and new emphasis on the need for definite specifications. Consequently, NBS prepared and published a considerable series of specifications. Earlier ones were called "Recommended Specifications," being recommended for Government use by certain Interdepartmental Committees. After the establishment of the Federal Specifications Board in 1921, the titles "United States Government Specification" and "United States Government Master Specification" were used. More than 150 specifications were issued by NBS under these titles, along with a number prepared in cooperation with industrial organizations and published for general commercial use. Since 1928, however, NBS work on methods of testing and on properties of commodities has been published in the form of technical papers and reports, and the results of that work have been used in specifications issued by other organizations. For example, hundreds of members of the NBS staff have taken an active part in committees of the Federal Specifications Board and the American Society for Testing Materials, as well as in a great many sectional committees under the procedure of the American Standards Association.



The new standard of length — a spectroscopic lamp containing a single pure isotope of mercury —is held by Dr W. F. Meggers, Chief, NBS Spectroscopy Laboratory. The lamp is shown against the enlarged spectrum of the pure mercury isotope from which the length measurements are obtained. NBS is making the lamps available to science and industry.

National Bureau of Standards

Public Utility and Safety Standards

The Bureau's reputation for collaborating with State authorities and with industrial organizations without seeking regulatory powers soon led to new applications of its measurement and research work specifically provided for by the Congress. Between 1910 and 1915 studies were undertaken to determine what regulations appeared necessary to assure safe and adequate electric and gas service, and the Bureau's recommendations in these fields have had large influence in promoting adoption of uniform and practical rules by State commissions.

Another extremely important project was an investigation of the effects of stray electric currents from street railways in damaging underground metal structures, especially pipe lines. Such damage was very great and gave rise to serious controversy between the several public services involved. NBS researches led to a cooperative and fairly successful effort by the utilities concerned to reduce the damage by improving methods of distributing current and by protecting the pipe lines, instead of fighting in the courts to determine which utility must pay for damage done. Incidentally it was proved that corrosion of pipe lines quite independently of stray electric currents may cause very serious damage. The resulting studies of soil corrosion and methods for reducing it have become important because of increased use of pipe lines for transporting oil and gas.

A special assignment to investigate hazards arising from distribution of electric energy at high voltages led to the development of the National Electrical Safety Code, for which NBS later became sponsor under the procedure of the American Standards Association. Application of that Code in arsenals and navy yards during World War I brought requests for NBS to take the lead in formulating safety standards for other industrial operations in Government establishments. In order to make these industrial safety codes more generally acceptable and applicable, cooperation was sought from manufacturers, insurance organizations, and engineering societies as well as Federal and State governmental authorities. Formal conferences at which all such interests were represented were held at NBS in January and in December, 1919. The outcome was a decision to undertake a comprehensive national safety code program under the auspices of the American Engineering Standards Committee[1] provided that the Committee should be greatly enlarged by taking in representatives of all competent national organizations in addition to the orig-

[1] Now the American Standards Association Incorporated.

inal five engineering societies and three Government departments. This was promptly done and NBS took sponsorship for seven codes included in the AESC program. This work has continued up to the present time, the Bureau being sole or joint sponsor for safety codes for elevators; for logging and sawmills; for protection against lightning; for electric fences; for protection of hands, eyes, and respiratory organs of industrial workers; for safety glass in vehicles; and for industrial use of x-rays in addition to the National Electrical Safety Code.

Simplified Practice Recommendations and Commercial Standards

In 1921, as a result of studies of industrial waste which Mr. Herbert Hoover had directed, a program of "simplification" of industrial products was undertaken. The purpose was to reduce costs of manufacture and distribution of goods by cutting out unnecessary or uneconomical variations of size, design, or composition of products. This was accomplished by the development of Simplified Practice Recommendations listing limited numbers of sizes or varieties which constituted the major part of sales and which were to be produced and stocked by manufacturers and dealers in preference to other sizes or varieties.

The Simplified Practice Recommendations were developed by committees representing the industries concerned, after consultation with distributors and users of the products, and were issued by NBS in behalf of the respective industrial groups. This procedure found increasing favor with industries and was later applied to the development and promulgation of specifications covering quality of products, designated as Commercial Standards, the first of which were issued in 1928. In the meantime NBS had given much attention to promoting the use of commodity specifications, especially by governmental agencies, Federal, State, and local. As a part of this activity, a National Directory of Commodity Specifications was issued in 1925. It gave references to about 27,000 specifications covering more than 6,000 commodities, and was very widely used by purchasing agents. (A second edition was issued in 1932 and a third in 1945. A supplement was issued in 1947.)

The magnitude of the work on simplified practice, Commercial Standards, codes, and other specifications became so great that in 1927 a Commercial Standards branch was set up under an Assistant Director of the Bureau. The economy program of 1933 brought drastic curtailment of these activities, but the work on simplified practice and on Commercial Standards was revived and continued as an important branch of NBS work until 1950, when it was transferred to the Bureau of Domestic Commerce. Up to that time about 240 Simplified Practice Recommendations and 160 Commercial Standards had been issued, and most of these had gone through several revisions to keep them abreast of commercial developments.

Development Projects

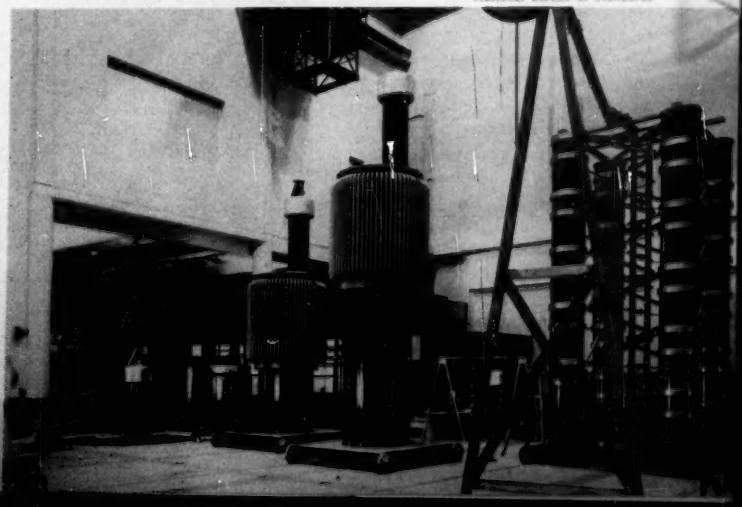
Another kind of activity which has grown out of the Bureau's basic research and measurement work is a general consulting service to other Government agencies and the development of equipment to meet their special needs. While invention and development of devices other than instruments for measurement or testing has been undertaken only as a service financed by other agencies, such work in times of emergency has grown to be greater than the Bureau's own basic work.

World War I brought a flood of requests from the armed forces for technical assistance. To meet military needs, NBS made notable advances in radio, optical, and aeronautical instruments, and in equipment for sound-ranging to locate enemy artillery. It built one of the earliest "altitude chambers" for observing the performance of aircraft engines under low air pressures, and a wind tunnel to study the characteristics of aircraft components and air-speed meters. NBS also had a leading part in developing methods and equipment for the production of optical glass, and made a large share of the glass needed for military instruments. With funds supplied by the Navy this work was maintained on a small scale after 1918 and was again expanded to large-scale factory operation to furnish the tons of optical components required in World War II.

Another World War I project which has continued and gained added importance was the development and certification of master gages for mechanical parts, including screw threads. Besides work on

With this apparatus, NBS studies "artificial lightning"—very short duration surges of high voltage and intense current used to test high-voltage equipment. At the right is a 2,000,000-volt surge generator; the two large transformers (center) are rated at 350,000 volts, and the transformer in the background (smooth tank) has voltage ratings of 125,000 and 250,000 volts.

National Bureau of Standards



the gages, this led to arrangements for standardizing screw threads, and in 1918 Congress created the National Screw Thread Commission with the Director of NBS as its chairman. In various forms this Government commission has continued its work up to the present time, and in cooperation with ASA committees it is furthering the international unification of screw-thread practice on which notable progress has been made by agreements between the major English-speaking countries.

Beginning about 1920, NBS developed radio "compasses" or direction finders for use on shipboard and radio beacons installed and operated by the Bureau of Lighthouses. In 1921 it began the radio broadcasting of market reports for the Department of Agriculture. With the establishment of the Aeronautic Branch of the Department of Commerce in 1926, NBS was given responsibility for development of radio aids to air navigation and during the next seven years devised a large part of the system of beacons which was installed throughout the country. It also developed a thoroughly practical blind-landing, or instrument-flying, system, many features of which are incorporated in the system now in use. The radio development work was then diverted to projects for the Navy, one result of which was the radio meteorograph, which transmits continuous records of temperature, pressure, and humidity from instruments carried to great heights by balloons. Such instruments have been regularly used in large numbers by the Navy and by the Weather Bureau, and the provision of data thus obtained has revolutionized methods of predicting weather.

World War II again brought vastly increased demands for service to the armed forces. Many were met simply (but not easily) by mere expansion of work which foresighted staff members had already been carrying on. It is possible here to mention only a few projects. A condensed report on NBS war work prepared by Dr Lyman J. Briggs, then Director, covers nearly 200 pages.

In terms of money and manpower involved, the largest projects were optical glass production, grading of quartz crystals for oscillators, radio propagation prediction service, proximity fuzes, guided missiles, a diversified program on aerodynamic and aeronautical problems, applications of mathematics (largely calculation of tables during the war period), and various parts of the vast "atomic energy" program. All of these except the quartz-crystal project are still continuing.

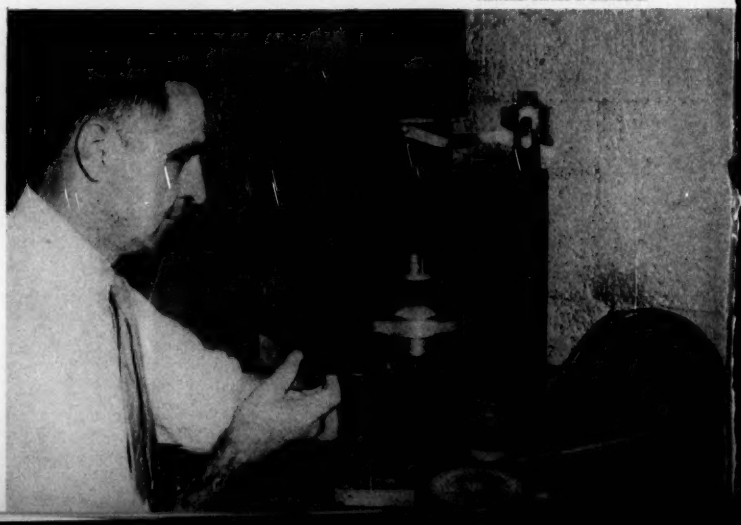
NBS participation in the uranium project began in 1939, when President Roosevelt designated Dr Briggs as chairman of a committee of prominent physicists to consider whether the energy released by fission of atoms might be used in weapons. Several university laboratories had vital parts in the experimental work which showed that an atomic bomb was possible, but NBS devised the methods of purification of uranium and of graphite which made those materials capable of giving a self-sustaining reaction in a pile, and developed methods for melting, casting, and working uranium metal without introducing impurities. NBS also served throughout the war as a central laboratory for control of the purity of materials used in the atomic bomb project, and has continued to carry on a considerable program, especially on measurement, instrumentation, and protection of personnel from radiation, for the Atomic Energy Commission.

On guided missiles the NBS worked with the National Defense Research Committee and the Navy in the experimental development of several types. One of these, the "Bat," was the first fully automatic guided missile successfully used in combat by any nation. The Bat was credited by the Navy with destruction of many Japanese vessels during the last year of the war. This project has been continued actively; to provide adequate space it is being transferred to a branch laboratory near Corona, California.

The Bureau's assignment in the fuze project was to develop proximity (air-burst) fuzes suitable for use on nonrotating projectiles, such as bombs, rockets, and mortar projectiles. The program was started in 1940 as a part of the Bureau's radio work since it appeared that a fuze using a minute radio transmitter and receiver would be most practical. The fuzes produced were found to increase the effectiveness of exploding projectiles by a factor of from 5 to 20 times under various conditions of combat; the staff assigned to the project was consequently increased to nearly 400 and set up as a distinct division of NBS. This division has continued to serve as a research and development group

This textile testing machine, designed at NBS, produces uniform abrasion over the entire area of a textile specimen from every direction in its plane.

National Bureau of Standards



handling ordnance problems for the Army.

Two of the war-time projects had such general and permanent importance that they have been not merely continued but expanded. These are the programs in radio propagation and applied mathematics.

During the war, the NBS mathematical tables group, originally set up in New York City as a WPA project, was found highly valuable in the computation of tables essential for modern navigational and ballistic work, but industrial and military applications of mathematics called for far more extensive facilities. An Applied Mathematics Division, formed in 1947 primarily to provide statistical techniques in the planning of experiments and the analysis of data in the Bureau's work, has consequently grown into a central consulting and computing service used by several Government agencies. Through the cooperation of the NBS Electronics Division, two high-speed automatic electronic computing machines have been built, and several other computers are being obtained for various Government agencies. The Division includes an Institute for Numerical Analysis in Los Angeles, which serves Government agencies and contractors in the Pacific Coast area and also works on methods for the numerical solution of mathematical problems.

Although the expansion of the radio propagation project is the result of our experience during World War II, the basic work in this field was begun by NBS more than 20 years ago when Bureau scientists first made observations on the conducting layers of the upper atmosphere. These conducting layers known collectively as the ionosphere, reflect radio waves which would otherwise disappear into outer space; they are thus of great importance in long-distance radio communication. When World War II began, difficulties in maintaining radio communication during military operations covering large distances soon showed the need for more information about ionospheric phenomena in the region between a radio transmitter and the receiver. Consequently the Interservice Radio Propagation Laboratory was set up at NBS to study the behavior of the ionosphere and effects of changes in it, and to prepare for the armed forces all possible information on radio propagation, including predictions of probable effectiveness of radio transmission at various frequencies and at different times and places. To this end, daily data were gathered from observing stations distributed over the whole earth and operated either by NBS, the armed forces, or allied countries.

The predictions and other information provided by the activity proved to be so valuable that at the close of the war all the Government agencies concerned agreed that the service should be continued. In fact, it was considerably enlarged by transferring to it some research work previously carried on separately by the Army and the Navy; and the designation Central Radio Propagation Laboratory was given to the enlarged organization, which became a division of NBS. The work on radio propagation has thus grown so large as to submerge the Bureau's radio standards work which is now conducted in the same division; however, the radio standards program is itself of great importance, including electrical measurements and standards for an ever-expanding range of frequencies now extending to the neighborhood of 100,000 megacycles per second. Included in this program is the transmission of standard frequencies accurate to one part in 100 million, from NBS radio station WWV. In accordance with provisions recently made by Congress, all of the radio work is to be moved to new laboratories at Boulder, Colorado, to be completed in 1953.

General Scientific Program

As has been indicated above, most of the specific projects which have been mentioned have really been like branches grafted upon the trunk of the Bureau's major function, the custody and maintenance of the national scientific standards. Since measurement is the basis of all exact science, and adequate and reliable measurement requires a knowledge of the fields in which it is to be applied, the National Bureau of Standards has directed its major efforts to fundamental research in physics, mathematics, chemistry, and engineering. Besides the groups whose work has been mentioned there are about 75 technical sections, each responsible for a specific field of research or testing.

National Bureau of Standards

NBS accelerated laboratory tests determine effects of outdoor exposure on plastics. Specimens are rotated under an ultraviolet lamp, then placed in a fog.

Much of this basic work lacks the glamour of new fields of research, but even in the most fundamental lines there are interesting developments. For example, the Bureau has been gratified to see enacted into law during 1950 definitions of electrical and photometric units which have also been internationally accepted and are based largely upon NBS work.

In connection with the even more fundamental units of length, time, and mass there have been recent advances. Progress has been made toward the acceptance of a precise, reproducible, natural standard of length in the wavelength of a spectral line of the isotope of mercury designated as 198, which has been produced, free from other isotopes, by bombarding gold in nuclear reactors. Lamps made with this isotope have been supplied to other laboratories and have been shown to make possible measurements more precise than those based upon any

(Continued on page 373)

Progress on International Agreements

FOUR electrical standards were recommended for international use at meetings of the International Electrotechnical Commission in Estoril, Portugal, July 4 to 12, 1951. They cover turbine type generators; climatic and durability testing of electronic components for radio communication; power and distribution transformers; and rules for short curcuit conditions of large circuit breakers. The standards will now be submitted to the national committees of IEC for approval. If approved, they will become IEC Recommendations and will be given world-wide distribution.

A color code for fixed resistors, and a series of preferred values for radio receiving sets, previously approved by the National Committees, were put in final form and released for publication.

Fourteen countries were represented at the Estoril meetings by 153 delegates.

The United States delegation of 12 members was headed by Dr H. S. Osborne, Chief Engineer, American Telephone and Telegraph Company, and president of the U.S. National Committee of the IEC. Other delegates were:

R. C. Sogge, Manager, Standards Division, Executive Department, General Electric Co., Schenectady, N. Y. (Vice-President, USNC)

Vice Admiral G. F. Hussey, Jr., USN (Ret), Managing Director, American Standards Association (Treasurer, USNC)

J. W. McNair, Electrical Engineer, American Standards Association (Secretary, USNC)

H. R. Arnold, Supervising Engineer, Transformer Division, Westinghouse Electric Corp., Sharon, Pa.

V. L. Cox, Manager of Engineering, Switchgear Division, General Electric Co., Philadelphia, Pa. (Chairman, ASA Committee on Switchgear, C37; Technical Advisor, USNC Tech Com 17 on Switchgear and Tech Com 32 on Fuses)

Professor C. L. Dawes, Harvard University, Cambridge, Mass. (Chairman, ASA Committee on Definitions of Electrical Terms, C42; Tech Advisor for USNC Tech Com 1 on IEC Vocabulary)

C. W. Falls, Manager Commercial Engineering Division, Small and Medium Motors Division, General Electric Co., Schenectady, N. Y. (Vice-Chairman, General Engineering Com, Motor and Generator Section, NEMA; Member, ASA Committee on Rotating Electrical Machinery, C50; Tech Advisor, USNC Tech Com 31 on Flameproof Enclosures)

C. M. Laffoon, Manager, A-C Engineering Department, Westinghouse Electric Corp., East Pittsburgh, Pa. (Member ASA Committee on Rotating Electrical Machinery, C50)

E. F. Seaman, Head Engineer, Standardization Planning Branch, Bureau of Ships, Department of the Navy, Washington, D. C.

C. F. Wagner, Consulting Engineer, Westinghouse Electric Corp., Pittsburgh, Pa. (Technical Advisor USNC Tech Com 8 on Standard Voltages and Currents, and 28 on Insulation Coordination; Joint Tech Advisor for USNC Tech Com 30 on Extra-High Voltages)

W. C. Wagner, Executive Department, Philadelphia Electric Co., Philadelphia, Pa. (Chairman, Standards Council of ASA)

The date of the 1954 IEC meetings, to be held in the United States, was set as the first two weeks in September. These meetings will celebrate the 50th anniversary of the decision to found the IEC made at the National Electrical Congress at St. Louis in 1904.

Eight technical committees and the Committee of Action (executive committee) were in session from July 4-12. As a result of their work two new technical committees will be organized—one on instrument transformers and the other on lightning arresters. The British National Committee will hold the Secretariat for the new transformer committee, and the U.S. National Committee has been invited to serve for the work on lightning arresters.

The Committee of Action voted for the resumption of work on measuring instruments (TC 13). The Hungarian National Committee has the Secretariat for this group which has been inactive for some time.

Additional work is being considered on the insulation of equipment operating at voltages not exceeding 1,000 volts and on rules relating to temperature rise common to all electrical equipment. Representatives of the various technical committees concerned will meet to consider and recommend the best methods of handling these subjects.

A project on standardization of dimensions for suspension insulators was proposed. The present differences between some of the national standards prevent a large degree of interchangeability. This work will be handled by the present committee on high voltage insulators (TC 36).

Preliminary proposals concerning reactivation of committee TC 29 on Electro-Acoustics were submitted by the Netherlands National Committee, as requested at the last meeting of the Committee of Action. The Netherlands Committee is now working on final proposals to be circulated to all the national committees.

Progress reports of the technical committee meetings held at Estoril are as follows:

Definitions of Electrical Terms, TC1 —

Revision of the 1938 standard on electrical definitions and terms is underway. Work is almost completed in two of the 17 fields to be covered —electronics and power. The new and revised terms and definitions will be submitted to the national committees for approval as soon as they are ready. The terms will be listed in six languages while the definitions will be listed in only two—English and French. Esperanto will be included in the languages used. Wherever possible, terms will be identified by a UDC (Universal Decimal Classification). If the UDC is not available, the committee will go on with its work rather than wait for the classification.

Arrangements have been made for a number of subcommittee meetings during the coming year. The aim is to complete the entire project by 1954.

Rotating Electrical Machinery, TC 2—

Preferred standards for turbine type generators have been completed by subcommittee 2A. These standards will be submitted to the national committees for approval. It is expected that they will be published along with the corresponding

standards for steam turbines being prepared by TC 5.

The revision of IEC Publication 34 applicable to rotating electrical machines other than traction motors and generators was completed and an Editing Committee was appointed from TC 2 to prepare the revised manuscript. The rivised edition of Publication 34 will be submitted to the National Committees of the IEC for approval.

Subcommittee 2B discussed the standardization of various dimensions of the frames of electric motors. They had difficulty in reconciling the divergent viewpoints of the metric countries who wish to use preferred numbers in the metric series, with the views of those who would be prepared to go along with the adoption of the dimensions given in the American Standard. Work on this is continuing.

Standard Voltages, Current Ratings and Frequencies, TC 8—

The problems before this committee had to do with a revision of IEC Publication 38—Standard Voltages. This revision is important since other IEC Committees are concerned with the establishment of insulation levels which cannot be done until the standard system of voltages has been arrived at. Difficulty has been experienced due to the differences in European and American practice. It was found impossible to reach agreement on a single list of voltages below 30 kv. Therefore, two lists of system voltages were set up. For voltages above 30 kv a single list was agreed to. This list is in terms of the highest system voltage.

Radio-Communications—Subcommittee on Component Parts for Radio Receiving Sets, TC 12-3—

Two completed documents were edited and released for publication and distribution to the National Committees. They cover: Color Code for Fixed Resistors; Series of Preferred Values. A third document—Climatic and Durability Testing of Electronic Components for Radio Communication—was completed for submission to the National Committees for their approval.

Transformers, TC 14—

The draft Specification for Power and Distribution Transformers, prepared as a result of the 1949 London meeting, was reviewed in conjunction with comments received from the National Committees. Agreement was reached on the content of a complete draft. An Editing Committee will put this draft into final form for approval by the National Committees before the end of 1951.

Electrical Insulating Materials, TC 15—

As this was the first committee meeting, the initial work was directed to developing the scope and program of activities. It was agreed to start work on testing methods. Arrangements were made for collecting the necessary test methods from the various countries to assist in rapidly carrying forward this work.

Switchgear for Electric Power Circuits, TC 17—

Chapter 1 (Rules for short circuit conditions of large circuit breakers) of the switchgear for electric power circuits standard has been revised. After any necessary editorial corrections have been made, it will be referred to the National Committees. Work has begun on the second chapter.

Coordination of Insulation for Electric Power Systems, TC 28—

Agreement was reached on a table of power frequency and impulse test voltages which were based on the list of system voltages adopted by TC 8 on Standard Voltages and Currents. It is now possible for the IEC Technical Committee on Transformers and Switchgear to formulate rules for high voltage tests to be applied to their particular types of apparatus.

General Administrative Decisions—

Work of the IEC has expanded to such an extent that it has now become necessary to increase the budget. A careful study was made by the president and treasurer and they recommended an increase in the staff and office facilities. Therefore, it has been recommended that the National Committees make arrangements for an increase of 50 per cent in their dues and a 10 per cent contribution to working capital.

Voting is now underway for the readmission of Spain. An inquiry has been received from Germany re-

(*Continued on page* 368)

The American Delegation at Estoril, Left to Right: Professor C. L. Dawes; C. W. Falls; V. L. Cox; Vice Admiral G. F. Hussey, Jr; H. S. Osborne; H. R. Arnold; R. C. Sogge; W. C. Wagner; C. M. Laffoon; J. W. McNair; E. F. Seaman; C. F. Wagner.

PRIOR TO LATHING AND PLASTERING

Check lath and plaster materials. Inspect grading of aggregate. Check storage facilities for protection against weather and moisture.

PLASTER BASE ERECTION

For unit masonary, check type and mix of mortar being used, lintel construction, straightness of walls, presence or absence of structural cracks, and installation of proper grounds.

For gypsum lath check installation method. Check grounds for minimum of ½ inch thickness over face of plaster base, and use of cornerite and corner bead reinforcement.

For metal lath check nailing or tieing materials. Inspect lap of sheets and tieing of lap. Check stud spacing, weight of lath in each use.

For insulating fiber board lath check for proper application and nailing, angle and corner reinforcement, and proper grounds.

JOB CONDITIONS PREPARATORY TO PLASTERING

Be sure all necessary mixers, boxes, water barrels, plaster boards, screeds, hods, etc are clean and that devices to provide proper heating and ventilation are present.

PLASTER APPLICATION — SCRATCH COAT

Inspect mixing methods and proportioning of aggregate to insure compliance with specifications. On metal lath, look for good full keys on back of lath, and complete coverage of the mesh on the front. On gypsum or fiberboard lath, scratch coat should average ¼ inch thick and be applied with sufficient pressure to assure good bond.

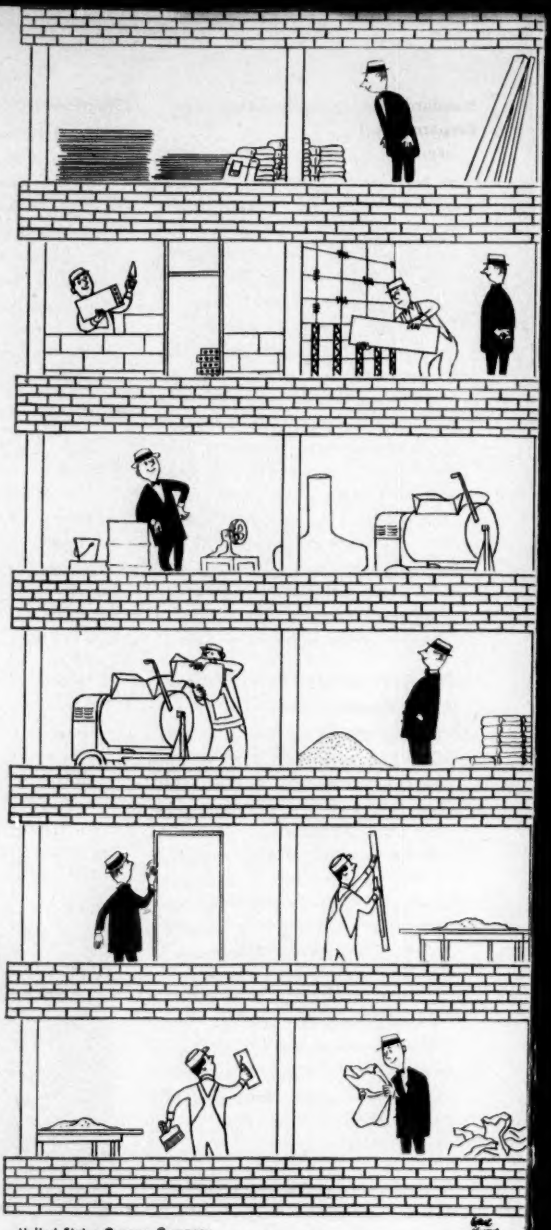
PLASTER APPLICATION — BROWN COAT

Brown coat inspection should determine if this coat is applied to proper thickness and if the surface is left rough under the rod or darby to receive finish coat. Setting time should be checked if possible.

PLASTER APPLICATION — FINISH COAT

Finishing plasters must be prepared, proportioned, and mixed for application in exact conformance with the explicit instructions found on manufacturers' plaster or lime bags. Be sure the finished surface is clean, sound and dry, ready to receive the trim and decoration.

—Excerpts from original as published in *Red Topics*, Issue 3, 1951.



United States Gypsum Company

How to Inspect a Plaster Job

THIS is a guide for architects, superintendents and builders and for those who are paying for a plastering job. These are the characteristics the "experts" look for when they step onto a construction site. These characteristics tip the scales of quality in plastering. Details to look for—from proportions of plaster to lime and minimum thicknesses and sizes of lath, to methods of application—can be checked by referring to the American Standards discussed by Mr McBurney.

Plastering and Lathing Standards Are Revised

by J. W. McBurney

J. W. McBurney, National Bureau of Standards, is secretary of ASA Sectional Committee A42 on Plastering. The committee is sponsored by the American Institute of Architects and the American Society for Testing Materials.

TWO standards prepared by Sectional Committee A42 on Specifications for Plastering and approved by the American Standards Association are now published in booklet form: American Standard Specifications for Gypsum Plastering, A42.1-1950, and Specifications for Interior Lathing and Furring, A42.4-1950.

Specifications for gypsum plastering (including requirements for lathing and furring) were first approved as an American Standard in 1938. In 1946, a complete revision of the 1938 standard was approved with the same title. The 1950 edition separates the material into two standards and represents a complete revision including some new requirements. The following changes in the gypsum plastering standard are of particular interest:

(1) The mandatory footnotes in the earlier editions are now incorporated into the body of the standard. This change takes account of questions concerning the legal status of a footnote as an integral part of a standard which has been adopted as a muncipal ordinance.

(2) A tabulation of equivalent mixes is given. Previous editions presented proportions, for the most part, in terms of weight ratios. These are retained, but the equivalents in bags and shovels are also presented, for guidance of the mechanics.

(3) The proportion of 1 part gaging plaster to 3 parts of lime putty by volume given in previous editions has been changed to 1 part of gaging plaster to not more than 3 parts of lime putty, by volume. It was agreed that the earlier requirement of 1:3 by volume was unworkable in the absence of tolerances. Evidence submitted showed the association of various defects with use of lime content exceeding 3 parts.

(4) The mica mineral, vermiculite, when heat-expanded, became recognized as an acceptable aggregate for plaster in the 1946 edition of the American Standard. Perlite, defined as "volcanic rock properly expanded by a heating process," first appeared on the market as a plastering aggregate about 1945 and by 1949 had become available in practically all parts of the Unitd States. Therefore, representatives of Committee A42, after investigating this material, recommended its acceptance as a permitted aggregate. Specifications A42.1-1950 does not recognize either vermiculite or perlite for use as an aggregate in the finish coat.

Except for some revisions in the sections dealing with gysum lath and the application of gypsum lath, little change has been made in the requirements for lathing and furring. The revisions are largely for purposes of clarification.

In the drafting of the American Standards for gypsum plastering and lathing, the intent of Committee A42 was not only to codify existing practice but also to formulate and issue requirements intended to advance the art and practice of plastering. It was also intended to correct conditions that have been responsible for faulty construction and poor performance. The provisions in A42.1-1950 covering "double-back plastering" illustrate the acceptance and codification of an existing practice. As an illustration of advancing the art, the 1946 edition provided a requirement for the then novel restriction in finish coats to lines containing not more than 8 percent of unhydrated oxide. This restriction was intended to prevent failures due to delayed expansion of the finish coat that caused large blisters and bulges. At the time of its adoption, this was much ahead of the currently recognized and commercially accepted practice.

At the time Committe A42 voted to require this type of lime, there were probably not more than three manufacturers who were producing, commercially, finishing hydrate meeting this specification. At present, there are no more than three producers of finishing lime that do not have equipment for making hydrated lime meeting these requirements. In 1946, the whole subject was highly controversial. In 1950, the action of the committee concerning hydration of lime in plasters was reaffirmed without opposition. Of interest, in this connection, is the recently released National Bureau of Standards Building Materials and Structures Report BMS121 "Investigation of Failures of White-Coat Plasters," which discusses in detail the behavior of lime not meeting the re-

quirements of A42.1-1946.[1] The information contained in this report was available to the members of Committee A42 prior to 1946, and the action of the committee concerning limes was based upon this information.

Another example of pioneering in these standards is the provision for "studless partitions" of both metal and gypsum lath. Figure 1 shows a metal lath studless partition before the application of plaster. Figure 2 shows the application of metal lath. Figure 3 illustrates a suspended ceiling of metal lath. As a

Metal Lath Manufacturers Association

Figure 1. Studless partition.

matter of interest, less than 5 percent of the text of Specification A42.1-1950 on gypsum plastering deals with the visible portion of the plaster on the interior walls of a room. The lathing and furring specifications of A42.4-1950 deal entirely with the hidden aspects of plastering.

The wide use and distribution of the first edition (1938) of these standards was continued with the 1946 revision. From the number of inquiries already received from municipal building code authorities, it is expected that the 1950 revision will be widely adopted by reference.

Special acknowledgment is due the committee members representing the labor and contractor groups for their interest and activity in the preparation of the revision. These are truly industry standards.

"THE plastering industry meets the challenge offered by new methods of interior finishing by maintaining a superior service for the building owner," says James A. Patterson, president of the Contracting Plasterers Association of Greater New York. "That service is embodied in the American Standards for plastering which set down in specific terms the minimum quality of performance that constitutes a satisfactory plastering job," he explained. Mr. Patterson is a member of the A42

Metal Lath Manufacturers Association

Figure 2. Installing metal lath.

committee, representing the Building Trades Employer's Association of New York.

Both the plastering industry and labor are back of the A42 standards because they guarantee to the homebuilder and the building contractor that plaster wall meeting American Standard requirements can be counted on to give thoroughly satisfactory service, Mr. Patterson said.

EDITOR'S NOTE: The National Foundation for Lathing and Plastering grants its Performance Plaque only where the lathing and plastering on a particular building meets the minimum specifications of the standards. Members of the Wood, Wire, and Metal Lathers International Union, AFL, are bound by their constitution to refuse work which is below the requirements of the standards.

Mr. Patterson has been active in the plastering business for 50 years. During that time he has seen many changes. In 1901, plaster was the only material suitable for interior finish. It enjoyed universal use not only for walls and ceilings but for ornate decorations. "Seldom did you find a room 50 years ago that did not have something to relieve the straight lines—plaster cornices, ornamented ceiling centerpieces, moldings, and similar decorations," Mr. Patterson said. Today's simple, straight lines have eliminated the use of plaster decorations, and the demand for speed in building is bringing wallboard into wide use for walls and ceilings.

Mr. Patterson sees much improvement in plastering methods since 1901. The use of metal lath has greatly increased the strength of plaster walls without adding weight. Vermiculite and perlite as substitues for sand have cut the weight of plaster walls to one-third their former weight. Acoustical plasters have been developed to increase the sound resistance of plaster walls. Packaged plasters have reduced the time needed for mixing. Recently, a machine has been developed and is being used in the West to speed further the plastering job.

Metal Lath Manufacturers Association

Figure 3. Installation of suspended ceiling.

"You will find many old buildings —as much as 100 years or more— in which the plaster is still good," Mr. Patterson points out. "Wallboard has yet to prove itself for long-term service. When a plastering job is done in accordance with American Standards A42.1-1950 and A42.4-1950 you can be sure you are really getting a plastering job that will stand up under service."

[1] The NBS studies were prompted by widespread blister-type plaster failures which were exacting an annual toll of millions of dollars. Tests carried out at the National Bureau of Standards revealed that the failures were caused by the expansion of one of the components of the partially hydrated "dolomitic" lime used extensively throughout the country for preparing finishing plaster. Methods for treating the lime and decreasing this component—unhydrated magnesia—have been developed by the Bureau in cooperation with industry and have already been introduced into commercial production. Plasters made from lime that is produced in this way are not subject to the blister type of failure, NBS explains.

U.S. Studies Europe's Electrical Rules

AMERICAN manufacturers of electrical equipment wishing to sell in countries using 220-volt and 380-volt circuits with 220 volts to ground should pay careful attention to specifications developed by the International Commission on Rules for the Approval of Electrical Equipment (CEE). This statement was made by Frank Thornton, Jr., Westinghouse Electric Corporation, who served as unofficial observer for the United States at the most recent meetings of the CEE in Finland. Mr Thornton's report is now available from the American Standards Association.

Standards for testing household cooking and heating appliances, motor-operated appliances, plugs and sockets, flexible cords, and insulated wires and cables were discussed, Mr Thornton reports. Through the CEE its members hope to remove some of the barriers to international trade that exist at present because of the differences in safety requirements from country to country.

The CEE is a voluntary European organization, with member-bodies from 13 countries, dedicated to the development of uniform European safety standards for all appliances, lighting equipment, radio and television receivers, wiring devices, and wiring materials for use in the home, office, store, and workshop on circuits up to 600 volts.

Many of the safety requirements in Europe are more severe than similar requirements in America because of the predominance of supply circuits of 220 volts to ground, which engineers consider more hazardous than 120 volts to ground. Fixed and portable incandescent and fluorescent lighting and the lower wattage portable appliance are supplied from 220 volt, 2-wire branch circuits with one wire grounded. Motors above approximately ½ horsepower and electrically heated appliances of the higher wattages are often supplied from 380 volt, 3-phase, 4-wire circuits with neutral grounded.

Definite comparisons of CEE specifications with comparable American Standards will not be possible until final drafts are adopted by CEE, Mr Thornton explained. However, it is possible to point to some of the more important differences that appear from comparison of the tentative CEE Specifications with American Standards.

Electric Cooking and Heating Appliances for Domestic Purposes—

Underwriters' Laboratories reviewed a draft of Part I which includes the general requirements and test methods that apply to all appliances. They found that some of the requirements were more severe than those in the Underwriters' standard with which it was compared. These were included in the sections on dielectric test; leakage current; resistance to humidity; maximum temperatures; enclosures; fire risk tests; creepage distances; cords and plugs. For example, more complicated tools are required for testing the effectiveness of guards or enclosures than those required by Underwriters' Laboratories. Appliance and attachment plugs must be according to the CEE specification for those devices.

Additional rules for specific appliances are being prepared, the working subcommittee reported. The appliances mentioned were portable and stationary radiant and convection air heaters, ranges, hot plates, pressing irons, and tank type water heaters.

Electric Motor-Operated Appliances for Domestic and Similar Purposes—

Underwriters' Laboratories also reviewed the general requirements and methods of test contained in Part I of this specification. A revised draft is being prepared for discussion at a meeting in October. Tentative specific requirements have already been prepared for "normal load" and other characteristics for the following: vacuum cleaners; floor polishers; sewing machines; phonographs; clocks; fans; food-mixers; liquid-mixers; refrigerators (motor-driven); washing machines; centrifugal wash-dryers; dish-washing machines; hair dryers; hair clippers; electric shavers; massage apparatus; port-

(*Continued on page* 368)

Committee	Secretariat
Editing	Denmark
Testing Laboratories	Czechoslovakia and Norway
International Test Mark	Belgium
General Requirements	Belgium
Insulated Cables	Netherlands
Plugs, Sockets and Switches	Belgium
Earth Leakage Circuit-Breakers	Czechoslovakia
Plugs and Sockets for Apparatus	Belgium
Lampholders	Netherlands
Motor-Driven Appliances—Domestic	Norway
Cooking and Heating Appliances—Domestic	Netherlands
Radio Receivers and Interference Suppressors	Denmark
Electric Fences	Denmark
Lighting Auxiliaries and Fittings	Sweden
Small Transformers	Belgium
Incandescent Lamps	Netherlands
Fuses	Great Britain
Portable Electric Tools	Norway

The Technical Committees now at work or authorized by the CEE and the secretariats are listed above:

ASTM Emergency Alternates to Save Materials

In a move to save scarce materials, the American Society for Testing Materials has announced approval of a number of emergency alternate provisions in specifications for steel tubing, steel tires, and heat-treated steel tires.

The scarcity of certain alloying elements is necessitating the use of scrap that may be high in phosphorus, and the loss of heats which fail to meet the present phosphorus limits is becoming increasingly serious, the Society explains. It has been recommended, therefore, that the present limit on check analysis for phosphorus content be increased from 0.030 percent maximum to 0.045 percent maximum in the following specifications:

Standard Specifications for Seamless Cold-Drawn Intermediate Alloy-Steel Heat Exchanger and Condenser Tubes (A 199–46),
Standard Specifications for Seamless Intermediate Alloy-Steel Still Tubes for Refinery Service (A 200–46),
Standard Specifications for Welded Alloy-Steel Boiler and Superheater Tubes (A 249–47), and
Tentative Specification for Seamless Alloy-Steel Boiler and Superheater Tubes (A 213–50 T).

In addition, emergency alternates have been approved for the following five stainless steel tubing specifications:

Standard Specifications for Seamless and Welded Ferritic Stainless Steel Tubing for General Service (A 268–47),
Standard Specifications for Seamless and Welded Austenitic Stainless Steel Tubing for General Service (A 269–47),
Standard Specifications for Seamless and Welded Austenitic Stainless Steel Sanitary Tubing (A 270–50),
Standard Specifications for Seamless Austenitic Chromium-Nickel Steel Still Tubes for Refinery Service (A 271–47), and
Tentative Specifications for Seamless and Welded Austenitic Stainless Steel Pipe (A 312–48 T).

With the present critical shortage of all materials, the steelmaker endeavors to reduce all the chromium in the slag so that it will be present in the metal, the *ASTM Bulletin* points out. The silicon reduction of chromite in the slag leads to phosphorus reversion. Due to the shortage as much chromium as possible is recovered, even at the risk of obtaining a higher phosphorus content. The average phosphorus content is already higher than two years ago and sometimes a heat of steel is produced which meets all requirements except that it is a few points high in phosphorus content. The emergency alternates recommended for the specifications listed provide that the present limit of 0.030 per cent maximum phosphorus be increased to 0.040 per cent maximum on ladle analysis and 0.045 per cent maximum on check analysis.

The emergency alternate for Steel Tires (A 26-39) and Heat-Treated Steel Tires (A 329-50 T) applies only to acid steel tires. A request was forwarded that due to the critical scrap situation, the maximum limitations for phosphorus and sulfur be raised from 0.05 to 0.60 per cent maximum as an emergency.

The emergency alternate provision in Heat-Treated Tires (A 329-50 T), applying to both basic and acid steel, in the opinion of the manufacturers, would not affect the quality of the heat-treated tires. By changing the manganese range from 0.60 to 0.90 per cent to 0.50 to 0.90 per cent, manufacturers will be able to use portions of a melt intended for untreated tires to fill small orders for heat-treated tires.

Actions by the ASTM Administrative Committee on Standards, August, 1951

New Tentatives

Specifications for:

17 percent Chromium-Iron Alloy for Sealing to Glass (B 256–51 T)
28 percent Chromium-Iron Alloy for Sealing to Glass (B 257-51-T)

Methods of:

Test for Resistance of Adhesives for Wood to Cyclic Accelerated Service Conditions (D 1183–51 T)
Test for Strength of Adhesives on Flexural Loading (D 1184–51 T)

Revision of Tentative

Method of:

Conducting Tests of Panels for Building Construction (E 72–47 T)

Revision of Standard and Reversion to Tentative

Recommended Practice for:

Thermal Analysis of Steel (E 14–33)

Methods of:

Testing Thermostatic Metals (B 106–40)

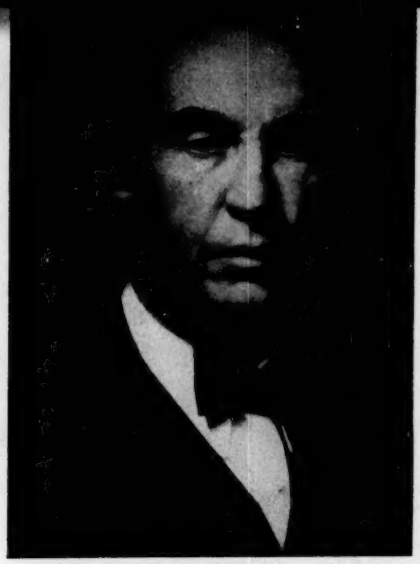
Method of:

Modulus of Elasticity of Thermostat Metals (B 223–50)
Estimating the Average Grain Size of Non-Ferrous Metals and Their Alloys, Other Than Copper and Copper Base Alloys (E 91–51 T)

Emergency Alternate Provisions

Specifications for:

Seamless Cold-Drawn Intermediate Alloy-Steel Heat-Exchanger and Condenser Tubes (A 199–46) (EA–A 199)
Seamless Intermediate Alloy-Steel Still Tubes for Refinery Service (A 200–46) EA–A 200)
Welded Alloy-Steel Boiler and Superheater Tubes (A 249–47) (EA–A 249)
Seamless Alloy-Steel Boiler and Superheater Tubes (A 213–50 T) (EA–A 213)
Seamless and Welded Ferritic Stainless Steel Tubing for General Service (A 268–47) (EA–A 268)
Seamless and Welded Austenitic Stainless Steel Tubing for General Service (A 269–47) (EA–A 269)
Seamless and Welded Austenitic Stainless Steel Sanitary Tubing (A 270–50) (EA–A 270)
Seamless Austenitic Chromium-Nickel Steel Still Tubes for Refinery Service (A 271–47) (EA–A 271)
Seamless and Welded Austenitic Seamless Steel Pipe (A 312–48 T) (EA–A 312)
Steel Tires (A 26-39 A) (EA-A 26)
Heat-Treated Steel Tires (A 329–50 T) (EA–A 329)



Agnew Awarded First Standards Medal

Dr Paul Gough Agnew

Dr P. G. Agnew has been chosen as the first recipient of the American Standards Association's Standards Medal. The gold medal is being awarded annually for leadership in the development and application of voluntary standards. The award to Dr Agnew is in "recognition of his long, distinguished and effective services to the cause of voluntary standardization."

Dr Agnew has given 45 years—a lifetime of service—to standardization. From the time the American Standards Association (then the American Engineering Standards Committee) was founded in 1919 until his assignment to consultant status in 1947 he served as the organization's administrative head. Dr E. C. Crittenden has said of him, "He has built up the staff of the Association and guided its work, and at the same time has preached the gospel of voluntary standardization to industry." During his 28 years in office, the organization's staff grew from 3 to 70 persons, and its membership from five engineering societies to a federation of some 100 national trade associations, technical societies, and consumer organizations. Today there are 1,215 American standards in use in such fields as engineering, safety, industrial, and consumer goods.

Before 1919 Dr Agnew served for 13 years with the National Bureau of Standards, joining that organization as a physicist a few years after it was founded. A scientist in his own right, he had a leading part as a member of the Bureau's Electrical Instruments Section in developing methods and apparatus for alternating-current measurements. Some of his papers on instrument transformers were milestones in the literature on that subject. In collaboration, he was responsible for the trail-blazing papers "The Determination of the Constants of Instrument Transformers," and "The Effect of Phase of Harmonics upon Acoustic Quality."

As head of the American Standards Association, Dr Agnew was outspoken on behalf of the philosophy of voluntary standards. His testimony before the hearings of the Temporary National Economic Committee on trade barriers in 1940 was an important milestone in bringing standardization to the attention of government and industry officials as a major factor in eliminating restraint of trade.

During the war, he was consulted by the War Production Board on the procedure for carrying on the necessary coordination of government and industry standards.

His views were made a part of reference literature when he wrote the section on standardization for the 1940 Encyclopedia Britannica.

Dr Agnew took an active part in organizing the international work on standardization. As head of the staff of the control standardizing organization in the United States, he served as one of the hosts to the secretaries of other national standardizing bodies who met in New York in 1926 and organized the International Standards Association. From 1937 to the dissolution of the ISA, he was a member of the ISA Executive Council. Following World War II he again played an active part in reactivating the international organization by attending the preliminary meetings at Paris and London in 1946 which drafted the constitution of the new International Organization for Standardization.

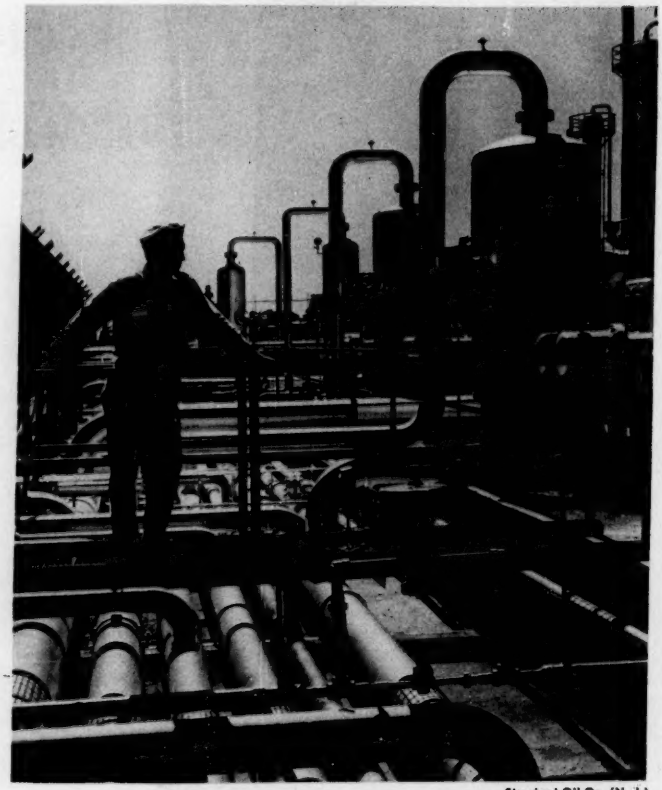
Dr Agnew himself has always considered that the principal service of the American Standards Association is the machinery it offers for the solution of controversies. On the twentieth anniversary of the Association he commented, "It seems to me that one of the outstanding accomplishments of the American Standards Association has been the solution of the many controversies encountered in the work. I say 'solution' advisedly because a real solution, based upon an understanding of the basic facts, rather than a mere compromise, has generally been found."

Behind the Pipeline Networks

THE pipelines that crisscross the country and form the nerve center of municipalities and of industry have been put together through the efforts of many different groups. Research done by materials engineers and producers, development programs of pipe and fittings manufacturers, and changing requirements of widely various groups of pipe users, all have had their share in developing modern piping systems.

Operating between the pipe and fitting manufacturers, the design engineers, and the ultimate purchaser of piping, the pipe fabricating industry translates the general designs into a series of individual components that can be erected into place economically to form functioning piping systems. Because of its wide experience in doing this, this industry is well qualified to assist in selecting the sizes and types of piping materials for the job to be done and to handle efficiently any technical problems attending the entire piping installation.

Standards of dimensions to insure interchangeability, of performance to assure quality of service, and of practice to insure safety and efficiency are essential if the industry is to serve its customers satisfactorily.



Standard Oil Co. (N. J.)

A gasoline plant's suction and discharge header weaves intricate piping designs, assembled through the pipe fabricator's specialized techniques

The Pipe Fabrication Institute, technical society of the industry, has a long record in standardization. Founded as the Power Piping Society in 1913, the organization took an active part in formulating the early standards that were used before the development of American Standards. It was closely associated with the Manufacturers Standardization Society of the Valve and Fittings Industry in this early program. Undoubtedly, these two organizations are primarily responsible for the fact that the piping industry is more completely covered by American Standards than almost any other industry of comparable complexity.

Recently, the Institute took a further step in national standardization by affiliating with the American Standards Association as a Member-Body. Thus, it now has a voice in the initiation of standardization projects and approval of American Standards.

For many years the Institute has been represented on the committees on Pipe Flanges and Fittings, B16; Bolt, Nut, and Rivet Proportions, B18; Code for Pressure Piping, B31; and Dimensions and Materials of Wrought-Iron and Wrought-Steel Pipe and Tubing, B36.

Its interest in national standards has not been confined to membership on sectional committees, however. To prove the soundness of the design of products made according to proposed American Standards before the committee released the completed recommendation, the Institute has manufactured, fabricated, and tested to destruction a number of full-size items covered by the work of these committees. This testing program was carried out at its own expense.

Among the products tested in this way was a series of steel flanges from 4 to 16 inches. Tests were carried out to check on the adequacy of the proposed American Standard on Steel Flanges, B16e. Later, a series of welded branch connections was similarly tested to check the rules covering this type of construction in the American Standard Code for Pressure Piping, B31.

The Institute also works on Committee A-1 on Steel of the American

Society for Testing Materials and on the recently reorganized committee on Piping and Tubing of the American Welding Society. This committee is now engaged in coordinating as far as possible the rules governing welding in various codes.

In its own organization, the Institute includes two permanent committees devoted to standardization and research on problems of an industrial nature.

Its Engineering and Standards Committee formulates dimensional and procedural standards for piping materials and fabricating operations that are widely used by piping designers.

One of these, on machined backing rings and end preparations for butt welds, was developed to eliminate confusion and delivery delays which result from the multiplicity of types of machined end details. Most expeditious handling and best economy can only be effective when complete machining details are specified at the same time that all materials are ordered, the Institute explains. For this reason, it carried out a study to determine the most practical type of machined backing ring and end preparation for standard use. The result was adoption of a standard 10-degree tapered machined ring and abutting end preparation. However, the Institute recommends that machined backing rings be used only on the most critical services, such as main high pressure steam lines, between boilers and turbines, and high pressure boiler feed discharge lines as encountered in modern central station plants. For all other services the use of the split type backing ring is recommended.

A standard method of dimensioning welded assemblies recommended for use of Institute members is designed to solve a problem that occurs in pipe fabrication but is seldom considered in the dimensioning of engineering design drawings. This is the shrinkage that takes place in the "initial root spacing" of a butt welded joint as the weld cools.

Standard linear tolerances, bending radii, and minimum tangents give the designer of prefabricated piping information on general shop fabrication standards on materials in common use. This applies particularly to bending and allowable tolerances for straight pipe, headers, nozzles, and bends.

Recognizing a change in testing practice due to the use of welded joints in shop-fabricated piping assemblies, the Institute has recommended that fabricated piping assemblies with flanged, threaded, or plain ends shall be hydrostatically tested at the shop only when specified by the purchaser. Procedures now used by members of the Institute provide greater assurance of quality performance than formerly, and shop hydrostatic testing no longer justifies the expense involved, in the opinion of the Institute.

The PFI's standard practice for cleaning fabricated piping answers questions that frequently arise as to the degree of cleanliness required on inside pipe surfaces.

In addition to its work on standards, the Pipe Fabrication Institute does important research work on piping materials through its Metallurgical Committee. This standing committee investigates the metallurgical aspects both of pipe fabricating operations and of the behavior of piping under high-temperature operating conditions. Its work on problems of material selection, welding, bending, heat treatment, and quality control has contributed much to make the membership of the Institute pioneers in the field of high-temperature, high-pressure central station installations.

C. C. Zimmerman, vice-president of the B. F. Shaw Company, Wilmington, Delaware, is chairman of the Institute's Executive Committee. R. Kennedy Hanson serves as president-commissioner. Other officers are: D. A. Black (vice-president, Power Piping Division, Blaw-Knox Construction Company, Pittsburgh, Pa.), vice-chairman of the Institute's Executive Committee; and H. E. Haller (president, National Valve & Manufacturing Company, Pittsburgh, Pa.), treasurer.

Roukams

Here, workmen in the pipe shop are seating a flange around a 20-inch pipe

Standards From Other Countries

MEMBERS of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. The titles of the standards are given here in English, but the documents themselves are in the language of the country from which they were received.

For the convenience of our readers, the standards are listed under their general UDC classifications.

362.11 Hospitals, Infirmaries

POLAND	PN
Nine Standards for Different Hospital Registration Forms	Z-09020, 09041/3, 09087,09103/ 4/5/6/10
7 Standards for Different Pieces of Hospital Furniture	Z-78008; 78028/9/30, 78039,78048, 78050
Hospital Medicine Supply and other Record Forms	Z-09101/2/-7
Nine Standards for Hospital Furniture	Z-78009, 78014,78017, 78026,78031, 78051,78055/ 6/7
Ordinary Cotton Wool	Z-85001
Absorbent Cotton	Z-85012
Six Standards for Different Hospital Registration Forms	Z-09069/70, 09080,09084, 09090,09111
Five Standards for Various Hospital Linen	Z-77003,- 77024,-77150,- 77204,-77205
Cotton, Flannel Strips and Bands	Z-85023,- 85027

FINLAND	SFS
Sputum Cups, Type A	Z.IV.51
Dressing Basin	Z.IV.53
Food Canteens, Types A and B	Z.IV.101/2
Bedstead for Adults	Z.IV.201

541.1 Physical Chemistry

RUMANIA	STAS
Concentration of Solute, Terminology and Units	1081

GREAT BRITAIN	BS
pH scale	1647:1950

541.4 Chemical Compounds

RUMANIA	STAS
Tartaric Acid	1219
Aluminum Oxide	1272
Reagents. Hydrochloric Acid	1276
Trisodium Phosphate, Industrial	1324
Reagents, Sodium Chloride	1326
Reagents. Acetic Acid, Glacial	1409
Sodium Sulfite, Industrial	1491
Reagents. Ferric Ammonium Sulfate	1492
Reagents. Potassium Nitrate	1493
Compressed Nitrogen	1494

546 Inorganic Chemistry

RUMANIA	STAS
Chlorine Gas, Liquefied	991
Manganese Mineral, Method of Analysis	1314
Colloidal Aluminum	1271

549 Mineralogy

RUMANIA	STAS
Dolomites, Calcinated for Metallurgical Use	1426
Raw Diatomite for Thermal Insulation	1427
Pyrites	1313
Ceresin Wax	1311
Pyrites, Minerals	1312

665.4/.5 Mineral Oils, Fats, and Waxes

RUMANIA	STAS
Chlorobenzene	1533
Petroleum Products, Measurement of Stored—	1165
Determination of Density of Gaseous Petroleum Products	1310

SWITZERLAND	SNV
Ubbelohde Drop Point Test	81102
Conradson Carbon Residue Test	81104
Viscosity, Fluidity and Inner Friction of Lubricating Greases	81106
Specific Gravity of Lubricants	81109
Flash Point Tests	81110

URUGUAY	UNIT
Definition of Tars and Pitches	76-50
Definition of Petroleum and its Products	77-50

669 Metallurgy

AUSTRIA	ÖNORM
Designation of Different Grades of Steel	M 3103
Drawn Wire for Manufacturing Wire Ropes	M 9502

CHINA	CNS
Symbols for Steel and Steel Shapes	109 G1
Steel Bars, Round, Square, Hexagon, Octagon	110-113 G2-5
Copper	6 H1
Lead	7 H2
Aluminum	8 H3
Zinc	9 H4
Nickel	47 H5

GERMANY	DIN
Cast Iron	1691
Malleable Cast Iron, Tension Test of—	50149
Forged or Rolled Steel, Explanatory Notes to DIN 1611 and DIN 1661	1606

ITALY	UNI
21 Standards for Aluminum Alloys of Different Compositions	3039 thru 3059
9 Standards for Chemical Analysis of Metals, Especially Determination of Nonferrous Metals Content in Steel	3103 thru 3111
Precision Round Steel Bars (Tolerance h8)	3113
Hexagon Steel Bars, Hot-rolled, Hollow, for Mining Purposes	3114

POLAND	PN
Compression Test of Metals	H-04320
Soft Solders	H-87100
Hot-rolled Alloy and Carbon Structural and Tool Steels	H-92601

RUMANIA	STAS
Pyrites, Method of Analysis of—	1269
Ordinary Hot-rolled Carbon Steel for the Use on Railway Rolling Stock	1351
Siderite Ore from the Locality of Poiana-Rusca	1449
Determination of Graphite Content in Steel and Cast Iron	1458
Determination of Silicon Content in Steel and Non-Alloy Cast Iron	1461
Lead Bronze	1512

SPAIN	UNE
Determination of Sulfur Content in Structural Steels	7019
Determination of Manganese Content in Aluminum and Aluminum Alloys	7023
Determination of Tin Content in Aluminum and Aluminum Alloys	7024
Determination of Manganese Content in Structural Steel	7027
Determination of Silicon Content in Structural Steel	7028
Lead, Definition	37201
Zinc, Definition	37301

674 Wood Industry

GERMANY	DIN
Cross Sections of Wood Window Frame Components	18052

ISRAEL	SI
Plywood, Plain	37

MEXICO	DGN
Railroad Sleepers	G-2
Plywood, Triplay	G-3
Lumber of Coniferous Species for Bridge Constructions	G-4

POLAND	PN
Wooden Box for Lard	D-79612

(*Continued on next page*)

Wooden Boxes for Bottled Wines	D-79646
Wooden Box for Fruit Paste	D-79650
Ash-tree Lumber	D-96005
Birch Lumber, Classifications	D-96003
Elm Lumber, Classification	D-96008

RUMANIA	STAS
Wooden Boxes for Packing Eggs	1249
Transversal Compression Test of Wood	1348
Veneers	1122
Cellulose Fiber Paste, Chemical Analysis and Physical Tests	1220/1
Plywood for General Use	1245
Logs of Resinous Species for Machining	1294
Plywood Panels	1575
Cellulose Sulfate Alpha, Types I and II	1584/5

676 Paper Industry

NETHERLANDS	N
Determination of Moisture Content in Paper	1762
Sampling of Paper	1763

POLAND	PN
Paper Bags with and without a Flap	P-79006/7

RUMANIA	STAS
Bristol Board, Type E	1345
Vellum Board	1433
Drawing Paper, Type B	1586

677 Textile Industry

BELGIUM	NBN
Linen Thread. Quality. Terminology. Definitions	242-1950

POLAND	PN
Gage for Weft Pirns	P-64002

RUMANIA	STAS
Knitted Goods Produced by Circular Machine	1279
Leather Sleeves for Cotton Spinning	1413
Combings of Mixed Merinos Wool Yarn, Metric Count 40 and 36	1495/6
Cotton Fabric for Sacks	1534
Cotton Dimity Fabric	1535
Sleeves for Spinning Machines	1537
Divider Belt	1538
Mixed Wool Clothing Fabric, Article 101	1612
Mixed Wool Overcoat Fabric, Article 301	1614
Mixed Wool Heavy Overcoat Fabric, Article 601	1616
Leather Spring-type Plugs for Single-Spindle Loom	1174
Different Cotton Tapes, Wicks, etc	1204-1208
Different Type of One- and Two-piece Overalls	1280-1283
Leather Strips for Spinning Machine	1284
Leather Shock Absorbers for Looms	1285
Different Grades of Cotton Fabrics for Shoes	1309
Two Types of Double Breasted Men's Overcoats	1327, 1330
Multiple Belts for Looms with Underswung Sley	1332
Cotton Thread for Furriers	1369
V-type Leather Shock Absorber for Looms	1414
Leather Sley Fitting	1415
Natural Silk Fibre Used in Shoemaking Industry	1497

677.72 Metal Cables. Wire Ropes

AUSTRIA	ÖNORM
Wires for Wire Ropes	M 9503
Test Rules for Wire Ropes	M 9504
Galvanizing Wires for Wire Ropes	M 9505

RUMANIA	STAS
Steel Cables	1352
6 x 19 Steel Wire Rope with Core of Vegetable Material	1354
6 x 37 Wire Ropes with Core of Vegetable Material	1355
6 x 61 Wire Rope with Core of Vegetable Material	1356
Standard 6 x 7 Steel Wire Cable with Fiber Core	135[illegible]
Steel Cables 1 x 19 and 1 x 37 for Funicular Railways	1513/4
Steel Wire Ropes for Marine Use with Seven Fiber Cores of Various Construction	1553/4/5
Plain Steel Wire Ropes; 1 x 7, 1 x 19, 1 x 37	1556/7/8

69 Building

AUSTRIA	ÖNORM
Roofing Tar Paper	B 3636

CANADA	CSA
Specification for Portland Cements	A5-1951
Specification for Standard Methods of Testing of Gypsum and Gypsum Products	A82.20-1950
Specification for Gypsum	A82.21-1950
Specification for Gypsum Plasters	A82.22-1950
Specification for Gypsum Moulding Plaster	A82.23-1950
Specification for Gypsum Lath	A82.24-1950
Specification for Gypsum Partition Tile or Block	A82.25-1950
Specification for Keene's Cement	A82.26-1950
Specification for Gypsum Wallboard	A82.27-1950
Specification for Gypsum Sheathing Board	A82.28-1950
Specification for Standard Definitions of Terms Relating to Gypsum	A82.29-1950
Specification for Methods of Chemical Analysis of Limestone, Quicklime and Hydrated Lime	A82.40-1950
Specification for Methods of Physical Testing of Quicklime and Hydrated Lime	A82.41-1950
Specification for Quicklime for Structural Purposes	A82.42-1950
Specification for Hydrated Lime for Masonry Purposes	A82.43-1950
Specification for Normal Finishing Hydrated Lime	A82.44-1950
Specification for Method of Sampling, Inspection, Packing and Marking of Quicklime and Lime Products	A82.45-1950
Specification for Tests for Unit Weight of Aggregate	A82.55-1950
Specification for Aggregate for Masonry Mortar	A82.56-1950
Specification for Sand for Use in Plaster	A82.57-1950

GERMANY	DIN
Dwelling, General Concept of	283, B1.1,2
Cement Tiles	1117
Wall Bricks, Solid and Hollow, Specifications	105

ISRAEL	SI
Nine Standards, for General Requirements for Wood Doors and for Different Types of Doors—Plain, Panelled or Glazed	23.1 thru 23.9
Wooden Door Frames	35

RUMANIA	STAS
Clinker Cements	1202
Determination of Mechanical Resistance of Concrete	1275
Preparation of Test Pieces from Concrete	1333

SWEDEN	SIS
Draught Preventer for French Windows	60 00 21
Double Casement Windows	60 00 57/8
French Windows	60 00 59/0
Hollow Concrete Blocks, General Rule	60 00 22

NEW ZEALAND	NZSS
Code of Practice for the Fixing of Concrete and Earthenware Roofing Tiles	804-1950

POLAND	PN
Work Supervisor's Report Standard Form	B-09251
Mason's Joint-forming Tools	B-59012/3
Bricklayer's Hammer-Chisel	B-59016
Mason's Squares: Steel, Wooden	B-59020/2
Mason's Seam-Smoothing Tool	B-59025
Hoe for Mixing Mortar	B-59035

UNITED KINGDOM	BS
Dimensions of Common Building Bricks	657:1950

UNION OF SOUTH AFRICA	SABS
Specifications for Metal Ties for Cavity Walls	28:1950

744 Technical Drawings

AUSTRIA	ÖNORM
Method of Indicating Tolerances on Technical Drawings	A 6067

CHINA	CNS
Engineering Drawings	3 B1

RUMANIA	STAS
Drawings: Brick Walls	1026
Architectural Cross Sections	1252
Usual Scales for Diagrams	1256
Graphical Symbols for Radiocommunication and Electrical Engineering	1589

SWEDEN	SMS
The Alphabet of Lines—Types and Designation	686

More Decisions on Unusual Injuries

The following interpretations have been handed down by the Committee of Judges of ASA Sectional Committee Z16 on accident statistics. They serve as a guide to companies who want to know how to count injuries due to unusual accidents in their safety record.

The American Standard Method of Compiling Industrial Injury Rates, Z16.1-1945, offers generally accepted rules for keeping track of a company's safety record. Monthly compilation of a company's accident toll shows at a glance when some change in operations or some unforeseen new hazard has caused a jump in the injury rate. Immediate action then can be taken to eliminate the hazard.

Safety engineers are invited to obtain interpretations of the standard by sending the facts on doubtful cases to the American Standards Association. Reprints of all the published decisions can be obtained from ASA.

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CASE 126. An electrician installed a ⅛-horsepower motor on Wednesday. He performed the work in a "squatting position." Although he did not make any radical motion or undergo unusual strains or exertion, he felt a slight catch in his back upon arising at the completion of the job. He paid no attention to the difficulty until he stepped over a small puddle of water while walking to another building, whereupon the pain became intense.

Two days later, Friday, the employee reported his discomfort for the first time to supervision and to the medical department. He continued to work until Sunday. He was hospitalized on Monday, the disability being diagnosed as a herniated disc.

The employee gave a history of an old back injury from which he had sustained periodic attacks during the past 10 years. He attributed this incidence to the old injury and, for this reason, neither reported the case nor sought medical attention immediately after the catch came about. Even when he did report it, he attributed the pain to the old injury, stating also that he did not see how the small motor he was installing would possibly have caused an aggravation.

It was also determined that the employee had followed a practice of seeking attention for recurrences of his back condition from a local physician. The physician, according to the employee, would treat him and "tape him up so he could return to work." It was also learned that the employee visited the local physician on Sunday when he was unable to go to work. The physician treated him and advised him to stay off his feet.

It was stated that the conditions of this case were typical of other back cases which have plagued persons interested in interpreting reportability and that a precedent ruling would be of immense value to all safety engineers. The pattern is usually the same: no circumstances leading to an accident, from which an injury or aggravation might be expected, can be discovered. A catch in the back merely occurs and a disabling condition results, and in view of the employee's history, the condition does not appear to be an aggravation. The question seemed to be when does an expected recurrence constitute an aggravation, or is it an aggravation per se because the disability recurred on the job.

The committee decided that this case should be counted in the rates. The members believed that the lifting of a ⅛-horsepower motor was probably not sufficient to produce the backstrain but, rather, it was the squatting position in which the man was working at the time, which aggravated the pre-existing condition.

The committee also commented that it could not formulate any general rule for cases such as this, as each case should be considered separately in the light of the accompanying circumstances to decide whether or not the condition arose out of employment.

•

CASE 127. A company asked for a clarification of Section 5 of the standard concerning the computation of "employee-hours of exposure." There had been some confusion concerning the significance of "exposure." The question was asked as to which of the two methods in the following example should be used:

(METHOD A)

the hours actually worked:
a plant of 663 employees
600 x 6 hours per day x 24 working days = 86400
(illness) 60 x 6 x 24 .....
(accidents) 3 x 6 x 24 .....

Employee-hours of exposure = 86400

(METHOD B)

the possible or "workable hours"
same example as above
663 x 6 x 24 = 95472 employee-hours of exposure.

It was pointed out that this would make an appreciable difference in the resulting Frequency Rate.

The committee agreed that Method A in the example given is the correct procedure for computing exposure. The members definitely came to the conclusion that periods absent from work because of sickness, injury, vacation, or voluntary absence should not be included in the hours of exposure.

•

CASE 128. On July 21, a coremaker, 59 years of age, white, with thirty-five years' service in the coreroom, appeared at the dispensary with a dermatitis on his forearms and hands. He stated, "When I work in the sand, I get sore arms."

Investigation revealed that the man had been having dermatitis for a period of several weeks previous to this claim. He had been treated at the dispensary, but had said that the trouble was caused by handling shrubbery which he had bought and planted in his yard and which had been treated in some manner to preserve it before it was planted. He was, therefore, referred to his family physician.

The man was absent because of this condition from June 19 to July 18, when he returned to work because the dermatitis had healed. The one day exposure on July 18 caused an acute flareup of the condition and it was again necessary for him to be away from his job. He returned to his family doctor, and, on July 21, reported to the company's dispensary to state that it was the opinion of his family physician that the core sand was causing the condition.

Skin tests by a specialist showed a definite reaction to the coreroom sands, with a particularly violent reaction to one grade of sand being used. Protective compounds were then used in the hope of giving this worker relief.

The coreroom employed about 100 men, but none of the others had had a reaction similar to this one, nor was there any history of the dermatitis developing in coreroom work prior to this case—that is, no history in this company.

The company asked that the committee give its opinion as to the reportability of this case, and also as to whether the case should be considered permanently disabling or a temporary total disability, under the assumption that the man would have to leave his job if protective measures did not correct the trouble.

The committee decided that this case should be included in the rates as an industrial injury and that it should be shown as a temporary total disability.

•

CASE 129. A supervisory employee felt a pain in his side shortly after he picked up a 100-pound slab of asphalt and the area in his side became swollen and sore. While the employee did notice some pain at the time, it did not reach such intensity as to cause him to stop work at any time. As a matter of fact, he thought nothing of it until a small lump appeared the following day, and he asked questions around the plant as to what a hernia looked like.

Medical examination confirmed that this employee had a hernia. The routine physical examination of this employee during the previous year had stated that there was a mild weakness of the left inguinal ring and recommended that he do no heavy lifting.

From the description of the case the committee came to the conclusion that there was no question that the employee had received a hernia as a result of his employment, and the question hinged upon

interpretation of 2.2(c) of the standard. There did not appear to be a clear history as to whether or not this employee stopped work momentarily because of the pain at the time he received the hernia.

The committee finally agreed that this case should be counted on the basis that it appeared to be quite definitely established that this hernia was of industrial origin.

•

CASE 130. On October 17, at 3:15 a.m., a bottle machine operator was pulling on a wrench to change a "knife" on the machine when he noticed a stitch in his back. A half hour later he went to the first-aid room where the nurse saw him and made this entry on his medical record card: "Advised to use heat. Refused tape support. Advised to see Dr A (plant doctor) if necessary."

On October 18 the employee visited the first-aid room and had a tape support applied to his back. He did not come in to see the doctor. (Doctor A visits the first-aid room every noon. The employee was working on the 11 p.m. to 7 a.m. shift.)

On October 20 the nurse made this entry: "Back still bothers. To see doctor in office. Did not go to see doctor."

Nothing more happened until January 5, when the employee went to see his doctor (not Doctor A, the plant doctor). Employee had an X-ray taken which showed "Osteo-arthritis of lumbo sacro and sacro-iliac area of back."

The employee was paid under a group insurance plan benefits for a nonindustrial injury. He was off work from January 6 through March 5. He also filed a claim for workmen's compensation.

The plant felt that the osteo-arthritis was not caused by the man's injury on October 17. The medical records at the plant did not mention a pre-existing arthritis, although the medical personnel believed that the man did have this condition before the injury. The plant also wondered why the employee waited nearly five months after the accident happened before he lost any time and before he bothered to see a doctor.

Upon request for further information, the company obtained a report from Dr A, who stated as follows:

> "The above-named employee was examined and treated by me for advanced osteo-arthritis of the lumbar and sacral spine. There was no history of injury, and his illness was entirely nonoccupational."

The committee agreed that this case should not be counted in the rates. One of the members commented that the facts presented were rather indefinite. It was therefore difficult to come to a completely logical decision, but in view of the concrete statement of Dr A to the effect that there was no injury, he believed that the case should not be counted.

•

CASE 131. An employee reported to his foreman on Friday that he had a slight bulge in his groin which he thought might be a hernia. His foreman placed him in the hands of a doctor for examination and, later, surgical work was done to correct the condition at the company's expense. When questioned as to what the employee knew about the case he stated that he lifted a 2 in. x 12 in. x 12 ft. timber on the previous Tuesday and that this must have caused the hernia. The employee worked all of Tuesday without mentioning this incident, and without any apparent trouble at all. He also worked all of the following Wednesday without any comment or rest period. He worked until noon the following Thursday, when the crew knocked off due to extremely bad weather.

The committee agreed that the case as presented did not meet the requirements of 2.2 of the standard and therefore this hernia case should not be included in the rates.

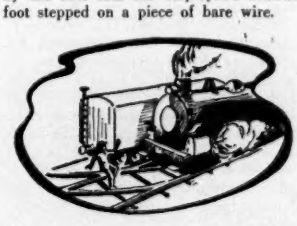
•

CASE 132. In 1942, employee while working on electric line pole contacted 27 kv conductor. He received electric burns on left hand and forearm and severe burn on right foot which necessitated amputation of right foot through tarsus. In 1949 employee bruised tender part where end part of foot had been amputated. This necessitated removal of lower part of leg midway between ankle and knee. Employee was fitted with artificial foot which he was able to use without the aid of cane or crutches.

In the case submitted to the committee, this employee stepped on a 3-inch piece of No. 4 bare copper wire lying on cement floor, which threw him off balance. Due to lack of feeling in artificial foot he did not realize he was off balance until he was falling. Employee twisted muscles in right leg, resulting in lost time.

The company believed that this lost time was caused by the artificial foot and not by circumstances that normally would cause loss time and therefore questioned if this injury should be included in the rates.

The committee decided that this injury arose out of and in the course of employment, and the case was in no way altered by the fact that the employee's artificial foot stepped on a piece of bare wire.



CASE 133. Employee was stooping over guiding wires into a metal street light post which was lying on the sidewalk. As he straightened up, he had a catch in his back. Employee lost 6 days from work.

The company contended that the work employee was doing was not sufficient to hurt his back but that the catch resulted from the condition of his back and therefore this time should not be recorded as a lost-time injury.

The committee decided that this injury should be included in the rates. One of the members commented that the description of the accident was brief, but seemed to indicate that the man was working in an unnatural position and this unnatural position aggravated the condition of his back.

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CASE 134. A shipfitter alleged that he sustained an elbow injury, while working in the forward gasoline tank of a large metal ship. He did not report the injury until the following day. Employee stated that as he was going from the starboard to the portside of the ship he went through an access opening in the centerline bulkhead. He said he struck his right elbow on the side of the opening as he went through. He felt a dull pain in his elbow the rest of the day but did not report it because he thought after a night's rest it would be all right. When employee first reported the injury he stated that there had been no previous injury to this arm. After he had been admitted to the hospital he told his supervisor that the only fracture they could find was an old one that he had sustained when he was about 16 years old.

The hospital diagnosed the injury as fracture medial condyle right elbow and ulna nerve injury. The employee was given physiotherapy treatments. He was hospitalized for 6 days and lost a total of 13 days from work.

The company, in investigating this accident, found that the centerline bulkhead opening was 27 in. x 47 in. with a good walkway on each side. It believed this was large enough for a person to walk through without any difficulty. After studying all the facts, the company questioned as to whether the accident occurred as alleged.

It appeared that the most important question on this case was whether or not the employee's story as to the manner in which the injury occurred should be accepted or denied. The committee decided that it was entirely outside of its function to establish the facts as to whether or not the injury actually occurred as stated. It was decided that this case should be counted on the basis that the committee had no way of contradicting the statement of the employee as to how the injury occurred.

•

CASE 135. At noontime on company property, an employee purchased a cup of coffee. Employee stated that as he started to walk away from the building he gulped a drink of coffee. It went down the wrong way and he began to gag. He then fell backward, striking his head. The employee was unconscious for a few minutes. He was taken to the hospital by ambulance. The doctor's diagnosis was "cerebral concussion—occupational doubtful."

The company investigated but could find no slipping or tripping hazard at the entrance to this building. One witness said he saw the employee raise the cup toward his mouth and then fall back with his body rigid. No one else was affected by this coffee.

The committee agreed that this case should not be counted in the rates. From the information given, it would appear that the fall of this employee when he was drinking coffee had practically nothing to do with his employment. The committee remarked that additional information might have been of assistance to it.

International Agreements

(*Continued from page* 355)

garding readmission of that country in the IEC. The Grand Duchy of Luxembourg has asked for membership, but due to the small size of the country they would like to be represented by the Belgian National Committee. The requests from Luxembourg and Germany are being investigated.

A number of other actions looking to improvements in the procedure were taken, as were routine administrative actions.

Arrangements—

The arrangements for the meetings made by the Portuguese Committee were very efficient and delightful. In addition to providing for the comfort of the delegates at the meetings themselves, the Portuguese Committee provided for extremely enjoyable tours of the various points of interest, American delegates report. Technical visits were arranged to outstanding hydro-electric and radio installations.

Europe's Electrical Rules

(*Continued from page* 359)

able business machines; 16-mm motion picture projectors.

Plugs and Sockets (Receptacles)—

Work on this specification was practically completed at the Helsinki meeting. The document is being presented to the October meeting[1] for final approval.

The 6-ampere and 10-ampere plugs use round pins and involve the grounding problem. Plugs for 15-ampere, 220-volt, and 380-volt two-pole and three-pole, with grounding pin are under consideration.

The predominance of 220 volts to ground on the final branch circuits in Europe is the reason several countries have required a third wire in the cord to ground the exposed metal parts of portable appliances. Some of the discussion at the sessions in Finland indicated a growing doubt about the value as a safety provision of this method of grounding small portables in dry locations such as homes and offices. In damp or wet locations and in metal working shops there is a tendency to require an insulating transformer (or safety transformer, as they call it) to step the voltage down to 42 volts maximum to operate the appliances, particularly hand tools such as drills, screw drivers, soldering irons, extension lamps.

The tentative program of the October meeting included discussions on lighting fittings and auxiliaries; heating and cooking appliances; small transformers; and specifications on plugs and sockets, radio receivers, and wires and cables.

The U. S. National Committee of the International Electrotechnical Commission has voted to participate in all future meetings of the CEE by sending an official observer.

[1] This meeting was held October 15-25 in Florence, Italy, after this issue went to press.

"Any time you solve the same problem the same way a second time you have created a standard, wittingly or not."—Vice Admiral G. F. Hussey, Jr., Managing Director, American Standards Association.

• • **Interesting Photographic Standards**—American Standards of interest and value to photographic workers have been issued since the beginning of the present year:

Dimensions for Film Packs Z38.1.1-1951, a revision combining two earlier standards with new requirements for the location of the slot through which the tabs extend and establishing values that control the location of the exposure numerals on the tabs.

Dimensions for Photographic Dry Plates Z38.1.30-1951, revised to include thickness values for American-made glass.

Dimensions for 35mm Magazine Film (for Miniature Cameras) Z38.1.49-1941, with a new dimension governing the maximum width of the tongue to avoid troubles with several European and American cameras having takeup spools that would not accept a standard (maximum) width tongue.

Dimensions of Photographic Double Film Holders of the Lock Rib Type Z38.1.51-1951. For the first time in a national standard, the dimensions are recognized for five standard sizes of holders that govern (a) the acceptance and retention of the film, (b) the size of the picture area exposed on the film, (c) the focus position of the film with respect to the camera back and (d) the dimensions and location of the "lock rib" to insure light-tightness of the holder when the dark slide is withdrawn.

Dimensions of Spools for Recording Instruments and Still Picture Cameras (Four separate Standards) Z38.1.52-1951 through Z38.1.55-1951. Dimensions of four sizes of film spools for film widths from 16mm to 70mm are established. The films in question are similar to motion picture films but are used either for continuous (non-intermittent) recording or for still picture records, including microfilming.

Flash Synchronizing Equipment, Bipost Type Connecting Cord Ends and Pins Z38.4.26-1951 and

Flash Synchronizing Equipment, Bayonet Type Connecting Cord Ends and Pins Z38.4.27-1951 are two standards recognizing the governing dimensions of two popular American-made connections. It is expected that these standards will be of interest and value to many manufacturers of flash lamp equipment in enabling them to design and produce units that will fit internal synchronization shutters and attachment fixtures of the standard types.

—An article on "Correct Exposure —Standards for Every Latitude," published in *Photographic Science and Technique*, the journal of the Photographic Society of America, reports not only on the American Standard Exposure Computer, but also on other standards of interest, as quoted above.

• • **As far away as Sydney, Australia,** the work of committees under the procedure of the American Standards Association receives recognition. An "Accident Prevention Bulletin" issued by the NSW (New South Wales) Factory Welfare Board refers to the American Standard allowable concentration for cadmium. "Exhausts similar to those used in chromium plating should be used where cadmium particles or fumes in the air exceed the maximum allowable concentration which has been set by the American Standards Association at 1 milligram of cadmium per 10 cubic meters of air during an eight-hour shift," the "Bulletin" says.

The standard referred to was an American War Standard which has since been withdrawn. ASA Sectional Committee Z37 is considering republishing it as a proposal for trial and comment.

What's New on American Standard Projects

Excavations and Foundations, A56—

Sponsor: American Society of Civil Engineers

The sectional committee has submitted a proposed standard covering Building Code Requirements for excavations and foundations to the sponsor. It is believed that this draft, edited to accord with suggestions received during recent months, harmonizes the points of view of all concerned with building code requirements for a wide variety of soil conditions.

This proposed standard is one of several on which the Defense Production Administration and the National Production Authority have urged ASA to expedite action. These organizations are considering use of such standards as the basis for orders affecting building construction under present emergency conditions.

Shafting and Stock Keys, B17—

Sponsor: American Society of Mechanical Engineers

Progress was reported on the revision of the two standards, Shafting and Stock Keys, B17.1-1943, and Woodruff Keys, Keyslots, and Cutters, B17.f-1930, following a meeting of the sectional committee in Chicago, Ill., on June 6, 1951.

Among the items discussed was a questionnaire on changes which should be included in the revised standards. Following a discussion of a request from the Association of Roller and Silent Chain Manufacturers for standardization of keyway sizes for shafting below ½ in. and greater than 5½ in. in diameter, it was agreed that questions be included in the revised questionnaire polling manufacturers on their present practice in selecting keys for these shafting sizes.

The American Standard Code for Transmission Shafting, B17.c-1927, also under the committee's jurisdiction, needed revision, according to some members of the committee. Additional material on shaft deflection and vibrational frequencies, both of which are important in the design of transmission shafting with long overhangs, such as used in agitating equipment, would be a useful addition to the revised standard, it was stated.

The possibilities of rounded corners on keys also came under discussion. It was felt that this subject should be introduced into the questionnaire if there was any possibility that the rounded corner keyway and keyseat were to be used extensively in the future.

The committee agreed to meet again during the ASME Annual Meeting at Atlantic City in November

Reported by ASME

Refrigeration Nomenclature, Y53—

Sponsor: American Society of Refrigerating Engineers

This sectional committee has four subcommittees: (*a*) Graphical symbols; (*b*) Abbreviations; (*c*) Letter symbols; and (*d*) Definitions. Preliminary reports on (*a*) and (*b*) were printed in the August 1950 issue of *Refrigerating Engineering*, the official organ of the sponsor. The report on (*c*) has just been printed in the September 1951 issue of that magazine.

On the definitions subcommittee (*d*), Professor F. J. Reed, Mechanical Engineering Department, Duke University, Durham, North Carolina, has been appointed new chairman. He is now having his committee complete its preliminary work. As soon as this is completed, it will be published in *Refrigerating Engineering* and subsequently combined with the reports on graphical symbols, abbreviations, and letter symbols. All will then be submitted to the American Standards Association with recommendation for adoption as American Standard on Refrigeration Nomenclature.

—Reported by the American Society of Refrigerating Engineers.

Standardization and Unification of Screw Threads, B1—

Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

The British Standards Institution has just made available revised editions of its standards on bolts, nuts, screws, and washers. These are in accordance with the unification agreements reached at a conference in London in April of this year. "Now that the information is available, we look forward to really practical implementation of the decisions by the Services and considerable sections of British industry," the BSI declares.

The standards in question are British Standards on Unified Precision Hexagon Bolts, Screws, Nuts (UNC and UNF threads), and Plain Washers, Normal Series, BS 1768: 1951; and Unified Black Hexagon Bolts, Screws, Nuts (UNC and UNF threads) and Plain Washers, Heavy Series, BS 1769:1951.

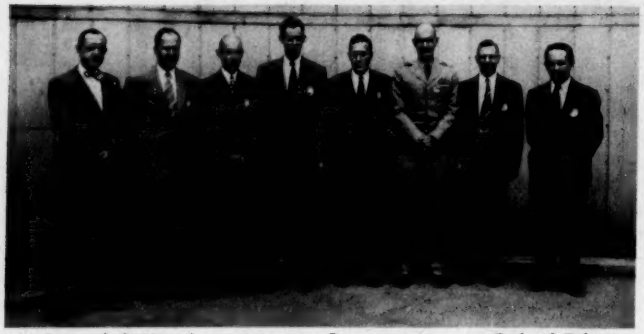
Surface Qualities, B46—

Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

Approval by the Sectional Committee B46 on the classification and designation of surface quality of a proposed American Standard Physical Specimens of Surface Roughness and Lay, clears the way for formal consideration of the draft for approval as an American Standard. The proposed standard includes specifications for two types of specimens for surface roughness and lay. The first type covers precision specimens intended for calibrating instruments for measuring surface roughness. The second type is intended to illustrate commonly used machined surfaces.

The sectional committee is organizing a subcommittee to develop proposals for standardizing instruments for measuring surface finish. The committee is participating in the trend toward unification of American, British, and Canadian standards. It met informally with representatives of the British Standards Institution in New York July 26 to discuss the possibilities of unification.

Reported by ASME



Members of C42's subcommittee on Communciations at Federal Telecommunications Laboratories (Left to right) H. R. Terhune, FTL; C. B. Robertson, AT&T; G. H. Gray, International Standard Electric Corp; W. R. Dohan, RCA Victor Division; E. I. Green, Bell Telephone Labs; Colonel J. W. Green, Jr, U. S. Military Academy; W. D. Cannon, Western Union; L. E. Kearney, Assn of American Railroads.

Definitions of Electrical Terms, C42—

Sponsor: American Institute of Electrical Engineers

Subcommittee 13 on Communication Terms was the guest of the Federal Telecommunication Laboratories, Nutley, N. J., September 13. This was the third meeting of its kind, the subcommittee having previously met at Bell Telephone Laboratories at Murray Hill, New Jersey, and at Western Union in New York City. E. I. Green, Bell Telephone Laboratories, is chairman. Under his guidance, the subcommittee has produced a greatly enlarged Section 65 for the forthcoming revision of American Standard C42-1941.

Lighting Factories, Mills and Other Work Places, A11—

Sponsor: Illuminating Engineering Society

A meeting of the sectional committee July 24 reviewed a complete draft of a revised edition of the code approved in 1942. The revision agreed to at that meeting is being sent to letter ballot.

Drawing and Drafting Practice, Y14—

Sponsors: American Society of Mechanical Engineers; American Society of Engineering Education

Six sections of the proposed American Drafting Standards Manual currently under preparation by the ASA Sectional Committee on Standards for Drawing and Drafting Room Practice, Y14, have been completed and will soon be submitted to industry for comment. These are: Section 2 on line conventions, sectioning, and lettering; Section 3 on projections; Section 4 on axonometric, oblique, and perspective pictorial drawings; Section 7 on sand castings; Section 10 on metal stampings; and Section 13 on flat and helical springs.

When completed, the drafting manual is expected to be composed of some 15 sections.

Reported by ASME

Wire and Sheet Metal Gages, B32—

Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

At a meeting June 22, 1951, the committee approved a proposed revision of the American Standard on Preferred Thicknesses. The draft will now be submitted to the American Standards Association.

The standard provides a simple system for designating the thicknesses of uncoated, thin, flat metals and alloys in decimal parts of an inch. This eliminates the confusion caused by the use of different gage number systems in the various metal industries.

The new series of thicknesses is based on the 40-series of preferred numbers. This gives a step-up of about 6 percent between each two consecutive thicknesses, as against about 12 percent in the existing standards, which is based on the 20-series of preferred numbers. The new standard covers a variety of thicknesses which for all practical purposes is equivalent to that of the previous gage systems.

For general purpose applications, the committee feels that the simplified preferred thicknesses given in the standard will facilitate interchangeability of different metals in design, reduce inventory, and increase the availability in warehouse stocks of thicknesses commonly required for general-purpose applications.

Reported by ASME

Chemical Industry Correlating Committee—

At its meeting in White Sulphur Springs, West Virginia, September 18, the CICC heard reports of subcommittees and discussed problems of special interest to the chemical industry.

A recommendation made to the Mechanical Standards Committee concerning the preparation of standard sizes for thin-walled pipe of corrosion-resistant materials other than stainless steel is to be discussed at the MSC meeting October 10, it was reported.

The possible advantages of extending Schedule 10 of American Standard B 36.10-1950 to include smaller sizes of carbon steel pipe as a conservation measure was discussed. A statement on the subject is to be prepared for further consideration by the committee.

The subcommittee on stainless steel analysis is making a canvass of approximately 100 chemical companies to secure a consensus of the chemical industry as to its requirements. In many cases the chemical industry needs more restricted limits than those given in American Iron and Steel Institute's Types 318 and 347 stainless steels, it is explained. Results of the canvass will be used as the basis for recommendations.

The subcommittee on valves and fittings for hazardous liquids in process lines is now trying to determine what constitutes chemical industry practices in the joining of pipes, valves, and fittings in process

lines carrying hazardous liquids. The survey is asking for information on preferred types of joints, maximum pressures, and types of gaskets.

The subcommittee on unfired pressure vessels reported it is collecting an experience record within the chemical industry to serve as a basis for recommendations for possible changes in the Unfired Pressure Vessel Section of the ASME Boiler Code. The study is being made because of the industry's belief that savings may safely be effected in the critical materials that are required in chemical processes. Included in its study will be examples of equipment which for one reason or another do not fall under Code requirements, and do not come up to the design requirements of the present code, which although they have operated safely over a period of years and have been economical from a materials standpoint.

On stainless steel valves and fittings, the Committee made a request to the Mechanical Standards Committee some time ago that sectional committee B16 consider the revision of American Standard B16.10 to incorporate stainless steel valves and fittings in smaller sizes as set forth in MSS Simplified Practice 42. The reply declares that the B16 committee has a long-range program to carry out this suggestion; however, it will take time before the work is accomplished. The Manufacturers Standardization Society of the Valve and Fittings Industry, one of the sponsors for the B16 committee, is collecting data and the committee is planning to enlarge its scope to adopt these smaller size ranges.

Since the chemical industry has no method of designating surface quality of a rolled product, such as sheet steel, it asked the Sectional Committee on Surface Quality, B46, whether the American Standard was intended to include rolled products.

Committee B46 has replied that it had studied the question of surface quality of rolled products but lack of technical data at the time had prompted it to defer action. The

(*Continued on page* 375)

AMERICAN STANDARDS

Status as of October 5, 1951

Legend

Standards Council — Approval by Standards Council is final approval as American Standards; usually requires 4 weeks

Board of Review—Acts for Standards Council and gives final approval as American Standard; action usually requires 2 weeks

Correlating Committees — Approve standards to send to Standards Council or Board of Review for final action; approval by correlating committee usually takes 4 weeks

Acoustics

American Standard Just Published—

Acoustical Terminology, Z24.1-1951 $1.50

Sponsor: Acoustical Society of America in cooperation with the Institute of Radio Engineers, Inc

Building

American Standards Just Published—

Specifications for Ready-Mixed Concrete (ASTM C94-48; ASA A37.69-1951) 25¢

Air Content of Freshly Mixed Concrete by the Pressure Method, Tentative Method of Test (ASTM C 231-49 T; ASA A37.70-1951) 25¢

Specific Gravity of Road Oils, Road Tars, Asphalt Cements, and Soft Tar Pitches, Standard Method of Test (ASTM D 70-27; ASA A37.71-1951) 25¢

Specific Gravity of Asphalts and Tar Pitches Sufficiently Solid to Be Handled in Fragments (ASTM D 71-27; ASA A37.72-1951) 25¢

Distillation of Cut-Back Asphaltic Products, Standard Method of Test (ASTM D 402-49; ASA A37.45-1951) 25¢

Sponsor: American Society for Testing Materials

Gypsum Plastering and Interior Lathing and Furring, Standard Specifications, A42.1-1950; A42.4-1950 (AIA 20-A-2; 21-A-2) 60¢

Sponsors: American Institute of Architects; American Society for Testing Materials

Keene's Cement, Standard Specifications (ASTM C 61-50; ASA A66.1-1951) 25¢

Gypsum Wall Board, Standard Specifications (ASTM C 36-50; ASA A69.1-1951) 25¢

Structural Clay Load-Bearing Wall Tile, Standard Specifications (ASTM C 34-50; ASA A74.1-1951) 25¢

Structural Clay Non-Load-Bearing Tile, Standard Specifications (ASTM C 56-50; ASA A76.1-1951) 25¢

Sampling and Testing Brick, Standard Methods (ASTM C 67-50; ASA A82.1-1951) 25¢

Sponsor: American Society for Testing Materials

Building Code Requirements for Reinforced Concrete (ACI 318-51; ASA A89.1-1951) 50¢

Sponsor: American Concrete Institute

Consumer

In Correlating Committee—

Standard Definitions of Terms Relating to Textile Materials (Revision of ASTM D 123-50; ASA L14.12-1951)

Standard Method of Test for Hard Scoured Wool in Wool in the Grease (ASTM D 584-50; Revision of ASA L14.40-1949)

Standard Methods of Testing Felt (Revision of ASTM D 461-50; ASA L14.52-1951)

Tentative Methods of Test for Fineness of Wool (ASTM D 419-50 T; Revision of ASA L14.26-1949)

Tentative Methods of Test for Fineness of Wool Tops (ASTM D 472-50 T; Revision of ASA L14.29-1949)

Tentative Methods of Test for Asbestos Yarns; (Revision of ASTM D 299-50 T; ASA L14.18-1951)

Tentative Methods of Testing and Tolerances for Glass Yarn (Revision of ASTM D 578-50 T; ASA L14.36-1951)

Standard Recommended Practice for a Universal System of Yarn Numbering (ASTM D 861-50; Revision of ASA L14.48-1949)

Sponsors: American Association of Textile Chemists and Colorists; American Society for Testing Materials

Electrical

American Standards Approved—

Preferred Voltages, 100 Volts and Under, C67.1-1951

Sponsor: Electrical Standards Committee

Specifications for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft (ASTM B8-50; ASA C7.8-1951)

Specifications for Soft Rectangular and Square Bare Copper Wire for Electrical Conductors (ASTM B48-49; ASA C7.9-1951)

Specifications for Hard-Drawn Copper Alloy Wires for Electrical Conductors

(ASTM B105-49; ASA C7.10-1951)

Specifications for Figure-9 Deep-Section Grooved and Figure-8 Copper Trolley Wire for Industrial Haulage (ASTM B116-49; ASA C7.11-1951)

Tentative Specifications for Rope-Lay Stranded Copper Conductors Having Bunch-Stranded Members, for Electrical Conductors (ASTM B172-50T; ASA C7.12-1951)

Tentative Specifications for Rope-Lay Stranded Copper Conductors Having Concentric-Stranded Members, for Electrical Conductors (ASTM B173-50T; ASA C7.13-1951)

Tentative Specifications for Bunch-Stranded Copper Conductors for Electrical Conductors (ASTM B174-50T; ASA C7.14-1951)

Specifications for Lead-Coated and Lead-Alloy-Coated Soft Copper Wire for Electrical Purposes (ASTM B189-50; ASA C7.15-1951)

Specifications for Cored, Annular, Concentric-Lay-Stranded Copper Conductors ASTM B226-50; ASA C7.16-1951)

Specifications for Hard-Drawn Copper-Covered Steel Wire (ASTM B227-49; ASA C7.17-1951)

Specifications for Concentric-Lay-Stranded Copper-Covered Steel Conductors (ASTM B228-49; ASA C7.18-1951)

Specifications for Concentric-Lay-Stranded Copper and Copper-Covered Steel Composite Conductors (ASTM B229-49; ASA C7.19-1951)

Tentative Specifications for Hard-Drawn Aluminum Wire for Electrical Purposes (ASTM B230-50T; ASA C7.20-1951)

Specifications for Concentric-Lay-Stranded Aluminum Conductors, Hard-Drawn (ASTM B231-49; ASA C7.21-1951)

Tentative Specifications for Concentric-Lay-Stranded Aluminum Conductors, Steel-Reinforced (ACSR), (ASTM B232-50T; ASA C7.22-1951)

Specifications for Rolled Aluminum Rods (EC Grade) for Electrical Purposes (ASTM B233-49; ASA C7.23-1951)

Method of Test for Resistivity of Electrical Conductor Materials (ASTM B193-49; ASA C7.24-1951)

Specifications for Hard-Drawn Copper Wire (originally ASTM B1-40; ASA H4.2-1941) (now ASTM B1.49; ASA C7.2-1951)

Specifications for Medium-Hard-Drawn Copper Wire (originally ASTM B2-40; ASA H4.3-1941) (now ASTM B2-49; ASA C7.3-1951)

Specifications for Tinned Soft or Annealed Copper Wire for Electrical Purposes (originally ASTM B33-46; ASA H4.4-1947) (now ASTM B33-50; ASA C7.4-1951)

Specifications for Bronze Trolley Wire (originally ASTM B9-46; ASA H4.5-1947) (now ASTM B9-49; ASA C7.5-1951)

Specifications for Copper Trolley Wire (originally ASTM B47-46; ASA H4.6-1947) (now ASTM B47-49; ASA C7.6-1951)

Specifications for Hot-Rolled Copper Rods for Electrical Purposes (originally ASTM B49-41; ASA H4.7-1942) (now ASTM B49-50; ASA C7.7-1951)

Sponsor: American Society for Testing Materials

In Correlating Committee—

Attachment Plugs and Receptacles, C73b (Addition to, and partial revision of, C73-1941)

Sponsor: National Electrical Manufacturers Association

Capacitors, C55 (Revision of C55-1934)

Sponsor: American Institute of Electrical Engineers

Standard Submitted—

Electrical Resistance of Insulating Materials, Methods of Test (Revision of ASTM D 257-49 T; ASA C59.3-1949)

Sponsor: American Society for Testing Materials

Standard Reaffirmed—

American Standard Specifications for Soft or Annealed Copper Wire (ASTM B3-45; ASA H4.1-1947) (now ASA C7.1-1947 R1951)

Requested by: American Society for Testing Materials

Graphical Symbols

American Standard Approved—

Graphical Symbols for Single (One) Line Electrical Engineering Diagrams, Z32.1.1-1951

Sponsors: American Institute of Electrical Engineers; American Society of Mechanical Engineers

Highway Traffic

In Correlating Committee—

Adjustable Face Traffic Control Signal Head Standards, D10.1 (Revision of D10.1-1942)

Sponsor: Institute of Traffic Engineers

Mechanical

American Standards Just Published—

Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses (ASTM A 120-47; ASA B36.20-1951) 25¢

Sponsor: American Society for Testing Materials

Screw Thread Gages and Gaging, B1.2-1951 $4.00

Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

In Correlating Committee—

Bearing Mounting Accessories, B3.9

Sponsor: Mechanical Standards Committee

Ring-Joint Gaskets and Grooves for Steel Pipe Flanges, B16.20

Sponsors: American Society of Mechanical Engineers; Heating, Piping, and Air Conditioning Contractors National Assn; Manufacturers Standardization Society of The Valve and Fittings Industry

Reaffirmation In Correlating Committee—

Preferred Numbers, Z17.1-1936, R1947

Mining

American Standard Approved—

Safety Code for Installing and Using Electrical Equipment In and About Coal Mines, M2.1-1951 (Revision of M2-1926)

Sponsors: American Mining Congress; Bureau of Mines, U. S. Department of Interior

Petroleum Products and Lubricants

Standards Submitted—

Test for Sulfated Residue from New Lubricating Oils (D 874-51; ASA Z11.68)

Test for Knock Characteristics of Motor Fuels by the Research Method (D 908-51; ASA Z11.69)

Test for Benzene and Toluene by Ultraviolet Spectrophotometry (D 1017-51; Z11.70)

Test for Olefinic Plus Aromatic Hydrocarbons in Petroleum Distillates (D 1019-51; ASA Z11.71)

Test for Apparent Viscosity of Lubricating Greases (D 1092-51; ASA Z11.72)

Test for Sodium in Lubricating Oils and Lubricating Oil Additives (D 1026-51 as revised on p 8 of 1951 D-2 Report; ASA Z11.73)

Test for Flash Point by Tag Closed Tester (ASTM D 56-51; Revision of ASTM D 56-36; ASA Z11.24-1936 R 1947)

Test for Sulfur in Petroleum Products and Lubricants by Bomb Method (D 129-51; Revision of ASTM D 129-50; ASA Z11.13-1950)

Definitions of Terms Relative to Petroleum (D 288-51; Revision of ASTM D 288-49; ASA Z11.28-1949)

Test for Neutralization Value (Acid and Base Numbers) by Electrometric Titration (D 664-51; Revision of ASTM D 664-49; ASA Z11.59-1949)

Test for Distillation of Plant Spray Oils (D 447-51T; Revision of ASTM D 477-41; ASA Z11.43-1941)

Test for Unsulfonated Residue of Plant Spray Oils (D 483-51T; Revision of ASTM D 483-40; ASA Z11.41-1940)

Test for Carbon Residue of Petroleum Products (Ramsbottom Carbon Residue) (D 524-51 T; Revision of ASTM D 524-42; ASA Z11.47-1942)

Withdrawal Requested—

Test for Steam Emulsion of Lubricating Oils (ASTM D 157-36; ASA Z11.15-1936)

Sponsor: American Society for Testing Materials

Photography

American Standard Just Published—

Sound Transmission of Perforated Projection Screens, PH22.82-1951 25¢

Sponsor: Society of Motion Picture and Television Engineers

Safety

In Correlating Committee—

Code for Forging and Hot Metal Stamping, B24.1 (Revision of B24-1927)

Sponsors: Drop Forging Association; National Safety Council

Safety Code for Mechanical Power Transmission Apparatus (Revision of B15-1927)

Sponsors: Association of Casualty and Surety Companies, Accident Prevention Department; International Association of Governmental Labor Officials

Fifty Years

(*Continued from page* 353)

other standard. "Atomic clocks" of types constructed at NBS measure time with a precision far beyond that obtainable from the relatively erratic rotation of the earth. There is no reason to think that their rates will change with the passage of time, because their measurements depend upon resonances arising from the unchanging structure of molecules of ammonia or of atoms of cesium.

A natural, reproducible, and practical standard of mass is not so near at hand, but the continually increasing accuracy in atomic measurements of various kinds may provide a substitute for it. Two recent contributions made by atomic measurements toward this end are the development of a method by which the strength of magnetic fields can be determined through the resonance of protons and a new determination of the faraday from the resonance frequency of ions in a magnetic field.

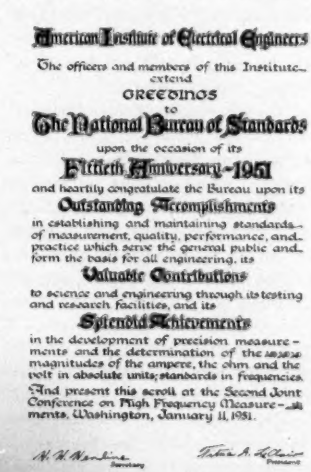
Another basic field in which progress is being made is the definition and measurement of temperatures. A revised "International Temperature Scale" was adopted in 1948, but already steps are being taken to make this practical scale coincide more precisely with the theoretical thermodynamic scale in the middle and higher temperatures and to extend the scale to include the low temperatures which have recently become so important in research on properties of materials.

So throughout the gamut of the Bureau's 15 technical divisions there are live problems to be solved. A new basic Act of Congress defining the functions of the Bureau, enacted as of July 22, 1950, adds to the section quoted at the beginning of this article explicit authorization to carry on the several branches of work which have developed as explained herein. The law also goes on to list 19 specific activities as examples illustrating the more general authorization. One of these is "the prosecution of such research in engineering, mathematics, and the physical sciences as may be necessary to obtain basic data pertinent to the functions specified herein." The general policy is to do such routine work as is necessary to provide service for scientific and industrial organizations and government agencies, but to avoid submerging the staff in routine service. In other words, NBS aims to remain primarily a research organization.

Cooperation in ASA Work

The Bureau's functions as set forth in the Act of July 22, 1950, include "cooperation with other governmental agencies and with private organizations in the establishment of standard practices, incorporated in codes and specifications." This gives formal legal authorization for a policy of cooperation with scientific and industrial organizations which NBS has always followed. Bureau staff members now hold about 1600 positions in technical committees of national and international organizations of this kind.

During the 30 years when the Department of Commerce was a member of the American Engineering Standards Committee and the American Standards Association, it was represented continuously in the AESC Executive Committee and later in the ASA Board of Directors and Standards Council by members of the NBS staff, and the Bureau itself has been represented in nearly all the ASA correlating committees. With the incorporation of ASA, officers of the Department felt it necessary to withdraw from membership and other connections related to management of the Association's affairs, but that change has not affected the Bureau's participation in the technical work. In addition to the 8 safety codes already mentioned, NBS is sponsor for ASA projects on dry cells and batteries, on electric meters, on fire-test methods, on sieves for testing purposes, and for 3 committees covering building code requirements for fire protection and fire resistance, for masonry, and for minimum design loads in buildings. Members of the Bureau staff hold about 125 memberships in sectional committees under ASA procedure and as many more in subcommittees.


American Institute of Electrical Engineers

The officers and members of this Institute extend

GREETINGS

to

The National Bureau of Standards

upon the occasion of its

Fiftieth Anniversary - 1951

and heartily congratulate the Bureau upon its

Outstanding Accomplishments

in establishing and maintaining standards of measurement, quality, performance, and practice which serve the general public and form the basis for all engineering; its

Valuable Contributions

to science and engineering through its testing and research facilities, and its

Splendid Achievements

in the development of precision measurements and the determination of the absolute magnitudes of the ampere, the ohm and the volt in absolute units; standards in frequencies.

And present this scroll at the Second Joint Conference on High Frequency Measurements, Washington, January 11, 1951.

Scrolls were presented to NBS by many ASA Member-Bodies (For ASA's, see December issue)

Gaillard Seminar, January 1952

Dr John Gaillard, mechanical engineer on the staff of the American Standards Association and lecturer in industrial standardization at Columbia University, will hold his next five-day private seminar from January 21 through 25, 1952, in the Engineering Societies Building, 29 West 39 Street, New York City. The major purpose of the seminar is to assist individual companies in organizing their own standardization work and to train their personnel in the basic approach to the problems arising in this work and in specification writing. So far 120 men, representing 81 organizations, have attended the Gaillard seminars.

The January, 1952, session will consist of ten conferences, one in the morning (9:30 to 12) and one in the afternoon (2:00 to 4:30). At each conference Dr Gaillard will present a subject, which will then be discussed around the table by all present.

Places may be reserved now. For details write to Dr Gaillard at 400 West 118 St, New York 27, N. Y. or phone him at the ASA office, Murray Hill 3-3058.

News Briefs

• • **With the opening of an annex** to its Cleveland Laboratories, the American Gas Association has increased its laboratories space from approximately 30,000 square feet to slightly more than 51,000 square feet. More than 95 per cent of all gas appliances marketed today are based on models which have been tested and approved in accordance with American Standard approval requirements. At the present time testing services costing approximately $500,000 a year are performed, and more than 4,000 models of gas appliances are checked annually. In addition, over a thousand factory inspections are made each year to check on the production of approved models. Constructed at a cost of approximately $240,000, the new annex brings the total investment in laboratories' plant and facilities to approximately $866,000.

• • **Spanish translations** are now being made available by the U.S. Department of Commerce of a number of Commercial Standards for products being exported to South America. Printed copies of the Spanish translation of Commercial Standard CS 20-49 for Vitreous China Plumbing Fixtures are now available. The Commodity Standards Division of the U.S. Department of Commerce declares that this edition embodies the requirements, tests, and definitions of the previous edition and brings the standard into line with current practices. The document establishes standard nomenclature, definitions, and methods of trading for vitreous china plumbing fixtures. It includes requirements for material, construction, testing, marking, and labeling.

Printed copies are also available of the Spanish edition of Commercial Standard CS154E-49 covering wire rope for export trade. This standard covers material requirements, constructions, methods of test, together with definitions, safety factors, and glossary of terms.

• • **A "round-up"** of important standardization activities under way in committees of the American Society for Testing Materials is featured in the *ASTM Bulletin*, September 1951. Many new standard test methods as well as progress on work under way are reported.

In this same issue, ASTM announces emergency alternate provisions in steel tubing specifications, steel tires, and heat-treated steel tires.

• • **Modular Wallpanel** — "The prefinished wallpanel manufacturing industry is well out in front in the national movement to provide building equipment and materials in standard size units which has been launched by the Modular Coordination Committee [Sectional Committee A62] of the American Standards Association," declares the August issue of *Building Specialties*.

"During the past decade or more the manufacturers of prefinished wallpanels, formerly called hardboard, tileboard and other names, have produced this popular wall and ceiling material in standard modular sizes ranging from 4 x 4 feet up to 4 x 12 feet in dimension.

"The advantages of these standard easy-to-use sizes of prefinished wallpanels have been demonstrated in time and effort saved in application of this material to walls and ceilings in home kitchens and bathrooms, in recreation rooms and laundries, in commercial rooms, factories, and institutions."

• • **After 40 years of activity** during which it played the leading role in promoting standardization in South Africa, the South African Standards Institution has discontinued its work. "This step was taken by the Institution because the Bureau of Standards had become well established," the *South African Standards Bulletin* explains. "The Bureau came into existence largely as a result of the efforts of the members of the Standards Institution. They have seen the Bureau develop and gradually take over the functions for which the Institution was originally founded."

The Institution was organized early in the century to develop standards for machinery and materials and to help reduce the variety of types and sizes of engineering, mining, and other equipment that was being imported for development of the country's mines. Rapid growth of the country's industry during and after World War II made it clear that greater facilities for testing and research were needed than could be supplied by the voluntary Standards Institution, the *Bulletin* reports. The Standards Act of 1945 established the South African Bureau of Standards with government support. The Act provided that one of the objects of the Bureau was to "assist the Institution in the preparation and framing of specifications intended to be standard specifications." The Standards Act has now been amended to give effect to the Institution's decision to discontinue its activities.

"The country owes a debt of gratitude to those members of the Institution who gave their time and knowledge freely and without remuneration in the interest of standardization, during a period when the industrial structure of South Africa was being built up and developed," the *South African Standards Bulletin* declares.

• • **Service Rewarded**—The Copper and Brass Research Association received the Class 1-C grand award from the American Trade Association Executives for service to its industry and to the public at ceremonies in Chicago September 17. The award was presented for the development of a standardized copper water tube and solder-type fittings, resulting in increased production, improved quality control, lower costs to the consumer, and conservation of scarce metals. T. E. Veltfort, manager of the Association, accepted the award on behalf of the Association.

• • **Encouraged by the success** of its course in Industrial Standardization last Fall, Temple University, Philadelphia, announces that another class has been scheduled to start in January 1952. The course seems destined to become perennial, the University comments.

"Ignorance of the objectives and accomplishments of industrial standardization programs has indicated that a comprehensive program of information and education is highly desirable," according to those in charge of the program. Recognizing the "value of standardization to industry and consumers on every level" the Management Service Division of the University's Community College and Technical Institute therefore arranged to present the subject in a series of evening lectures.

In addition to the regular lecturers (Fred M. Oberlander and Madhu S. Gokhale of the RCA Victor Division, Radio Corporation of America), guest lecturers spoke on specific phases of standardization, such as electrical and electronic components; surface coatings; and administrative aspects.

• • **Czechoslovak Standards**—Since June 1, 1951, all standardization work in Czechoslovakia has been centralized in the Czechoslovak Standards Office (Urad pro Normalisaci). This includes relations with the International Organization for Standardization. As a result, the Czechoslovak Electrotechnical Association (Elektrotechnicky Svaz Ceskoslovensky) has ceased to function. The Association had been acting as the Czechoslovak National Committee of the International Electrotechnical Commission.

• • **Code Administration**—Because "a building code is only a document," and "skilled administration and enforcement are essential to make it effective," Syracuse University is undertaking two studies that may help improve building code administration. The studies are being carried out under the research program of the Housing and Home Finance Agency. One involves an analysis of representative systems for administering municipal building codes. The other will develop a training program for local building officials.

"It is too often assumed that the adoption of a building code assures that buildings constructed in a community will be safe and sanitary. This is not true," declared HHFA Administrator Raymond M. Foley, in announcing the new studies. "Educational techniques for teaching the principles of building code administration to officials in smaller cities will fill a chronic need in an overall program to improve local building regulations," he declared.

• • **Award to Perlite**—The American Trade Association Executives' Class 1-A grand award was presented to the Perlite Institute at ceremonies in Chicago September 17. The Institute was honored for research and educational work that resulted in uniformity of production, and development of testing methods.

• • **Dr W. R. G. Baker,** vice-president and general manager of the General Electric Company's electronics division and chairman of the Communications and Electronics Division of the Electrical Standards Committee, has been awarded the Institute of Radio Engineers' medal of honor for 1951. The Institute's directors cited Dr Baker for his "early technical contributions to the radio transmitter art, his long sustained and effective leadership of institute and industry engineering groups, and his outstanding service to the Institute." Dr Baker is treasurer of the Institute, chairman of its professional groups committee, and a director. He is also chairman of the National Television Systems Committee of the Radio-Television Manufacturers Association.

• • **Modular materials in the Navy**—"'All personnel engaged in the design planning, standardization, or procurement of materials for Navy construction are directed to cooperate to the fullest extent,' reads a recent Circular Letter of Rear Admiral J. F. Jelley's Bureau of Yards and Docks on the subject of the 'Modular System of Building Materials and Construction Design.'

"'The Bureau has always been interested in advances in architecture, in engineering and in the materials used,' the directive states. 'The standardization of dimensions and details has resulted in economics in material, manpower, money, and time. These are very important factors ordinarily, and even more so in times of emergency. The Bureau, therefore, heartily endorses the principle of Modular Coordination.'"—Reported in the *Bulletin of the American Institute of Architects*, July 1951.

• • **Because of increasing demands** on the part of homemakers, backed by retailers, manufacturers are considering ways and means of marking cooking utensils to show American Standard sizes. A panel that included representatives of packaged food manufacturers, cooking utensil manufacturers, a home economist, a homemaker, a wholesale buyer of housewares, and the director of the country's largest private Bureau of Standards discussed this question on the Kathi Norris television show, WNBT, New York, September 24. All agreed that permanent size marking on the utensils is more useful to the homemaker than indication of the size on a temporary label.

American Projects

(*Continued from page* 371)

B46 committee invited the CICC to suggest personnel for a subcommittee to look into the matter further. A study committee is being appointed to draw up recommendations.

The study that is being made by the Instrument Society of America and the Scientific Apparatus Makers of America, Inc, on Rotometers for measuring flow of liquids through pipe was discussed. Observing that the problem is being actively studied, the CICC declared itself ready to help at any time if needed.

The next meeting of the CICC will be held concurrently with the Chemical Show in New York City the end of November.

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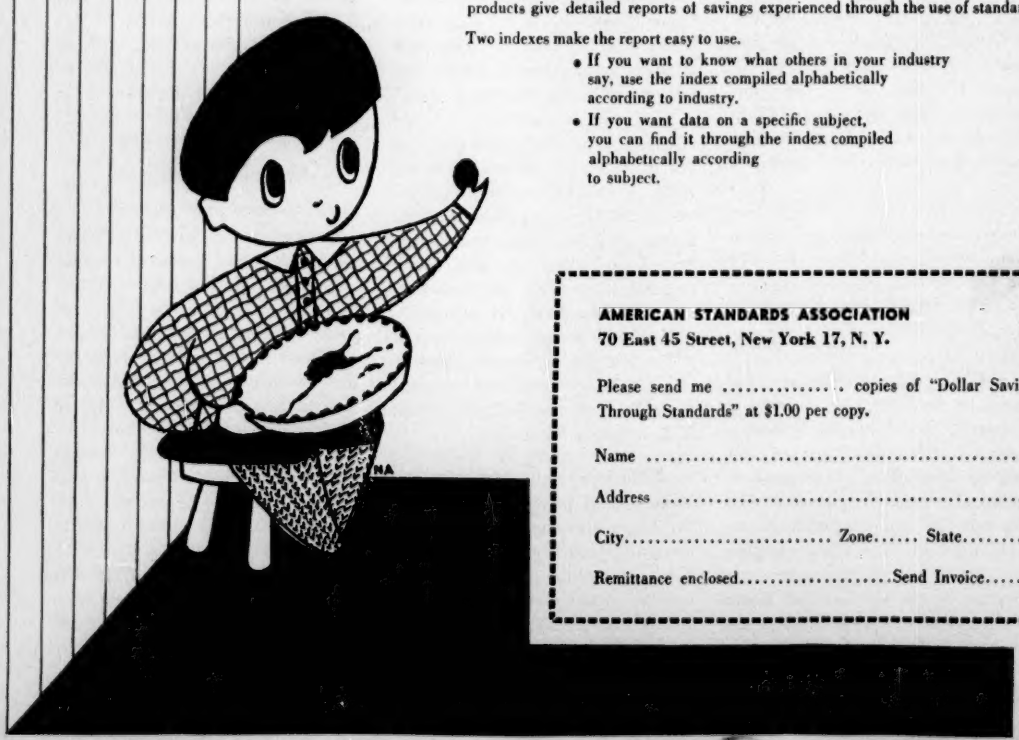

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